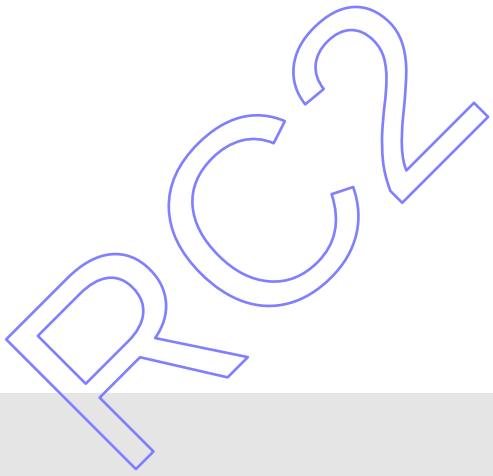
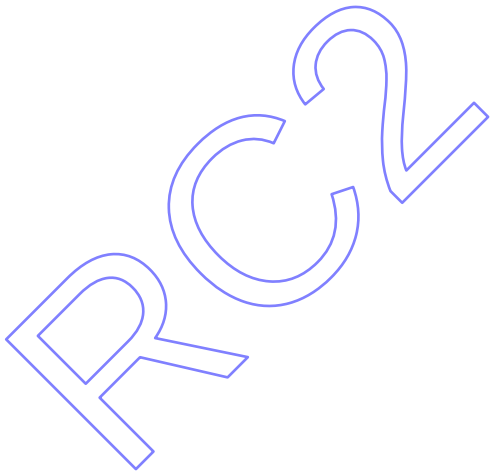
Test Management Tools Series



ApTest™ Manager User Guide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TEST MANAGEMENT TOOLS SERIES

ApTest Manager User Guide

Version 2.15
March 2007

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Significant Revisions

Revision	Date
Version 2.15	March 2007
General	
Run Data Fields renamed to Execution Fields	
Requirements features added	
Chapter 1 – Introduction	
RDBMS mirroring (1.5.1)	
Chapter 2 – Using ApTest Manager	
Test Set Folders (2.7)	
Session started email notification (2.9)	
Time styles (2.9.1)	
Chapter 3 – Defining Requirements and Tests	
Revision history table importing (3.3.3)	
Reordering Requirements and Test Cases (3.3.4)	
Numbering and naming Requirements and Test Cases (3.5)	
Icon for Internet Explorer spell checker for wysiwyg fields (3.7.4)	
Insert reference to uploaded file (3.7.6)	
Insert image icon for wysiwyg fields (3.7.7)	
Test Case, file, and Folder locking (3.8.1)	
Bulk Test Case operations (3.8.9)	
Chapter 4 – Running Tests	
Bulk session setting operation (4.2)	
Schedule information in Run Tests table of Sessions (4.2.1)	

Revision	Date	
Test Session Scheduling (4.2.4)		
Folder Trees, bulk operations, and improved table displays for Test Sets (4.5-4.6)		
Improved Set and Session management operation User Interface (4.9-4.10)		
Copy tests in Session based on results (4.10.5)		
Chapter 5 – Viewing Reports		
Schedule information in Select Reports table of Sessions (5.1.2)		
Templated Requirements Report (5.4.2)		
Including user defined HTML from files in templated reports (5.4.5)		
Customizable Test Case Details table in the Progress report (5.6.1)		
Including user defined HTML from files in Progress reports (5.6.2)		
Coverage Sets based on Test Case results (5.8.1)		
Schedule Report (5.9)		
Chapter 6 – Usage Scenarios		
Sending Test Case Information for review (6.1.8)		
Paramaterizing Test Cases with Session Variables (6.1.9)		
Version 2.14	March 2006	
Split off from User's Guide		

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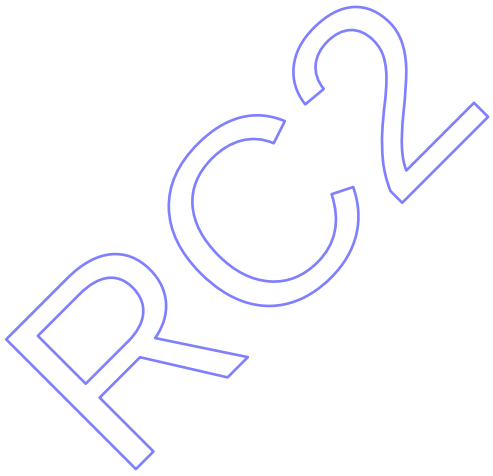

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Preface

Manual Organization

This manual is divided into six chapters that present the purpose, operation, and usage of ApTest Manager.

Chapter 1 – Introduction
An overview of the features and benefits of ApTest Manager

Chapter 2 – Using ApTest Manager
Managing testing with ApTest Manager

Chapter 3 – Defining Requirements and Tests
Defining Requirements and Test Cases with ApTest Manager

Chapter 4 – Running Tests
Executing ApTest Manager Test Sessions

Chapter 5 – Viewing Reports
Viewing ApTest Manager test reports

Chapter 6 – Usage Scenarios
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Documentation Set

See the *ApTest Manager Admin Guide* for additional information.

Chapter 1 – Managing Test Suites
Configuring ApTest Manager Test Suites

Chapter 2 – Administration
ApTest Manager Administrative features

Chapter 3 – Advanced Topics
Additional ApTest Manager features and functions

Chapter 4 – SQL Datastores
Mirroring data in relational databases

Stylistic Conventions

Italics indicate important references, placeholders, and command line variables.

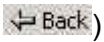
Boldface indicates emphasis. Boldfaced text is used to draw attention to active menu selections or hypertext links.

`Courier` type represents examples of computer-generated output, code samples, or a typed command line entry.

The paired hyphen and 'greater than' characters (->) denote separate elements of a mouse command sequence when moving through a series of menus.

Brackets [ ] are used to enclose optional items in a typed entry. Enter only the information within the brackets, and not the brackets themselves. Alternately, brackets are used to identify a bracketed menu item or a key on the keyboard (e.g., the Escape key is expressed as [Esc]).

Braces { } are used to enclose required items in a typed entry. Enter only the information within the braces, and not the braces themselves.

Representations of graphical user interface elements, such as the browser's "back" button, are displayed graphically (i.e. 

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Customization

ApTest Manager is template driven, allowing it to be customized to match existing test processes and procedures. Thus, an organization gains the benefits of improved management of its testing process without having to modify that process or adopt a new methodology.

In this Guide examples are based on templates shipped with ApTest Manager that are derived from the IEEE 829 standard for test documentation. When working with a Test Suite that is based on different templates the content of some screens may be different from those in this Guide.

Also, ApTest Manager can be configured to limit access to some features by users with different levels of access privileges. Thus some of the functionality shown in this Guide may not be available to all ApTest Manager users.

See the *ApTest Manager Admin Guide* for information on customizing and configuring ApTest Manager.

Chapter 1

1 Introduction

ApTest Manager is a tool for managing Quality Assurance testing of software and hardware products - defining test requirements and test specifications, executing tests, and viewing and comparing test results. A single installation of ApTest Manager can support any number of tests for any number of products.

General-purpose, Web-based, and highly customizable, ApTest Manager provides facilities for configuring, managing, executing, and recording the results of a variety of QA projects.

These facilities offer a number of distinct advantages over other methods of managing testing:

- Web-based test and requirement definition, test execution, and reporting
- Centralized repository of requirements, tests, and results
- Consistent test procedures within and across test runs
- Reuse of requirements and tests – continuous process improvement
- Flexible test organization
- Highly configurable through GUI and API to match existing processes and procedures
- Management of test execution by manual testers
- Execute tests in multiple test environments for compatibility testing
- Importing of information from test automation
- Common administration and reporting for manual and automated testing results
- Reports comparing new and previous results for regression testing
- Project reports showing project state, test coverage, and actual versus planned schedules
- User reports showing work performed by individual users
- Ability to export reports and import requirements and tests as CSV files
- Result summaries presented in tables and graphs

1.1 Features

1.1.1 WWW Application

ApTest Manager is completely Web-based. It is installed on a Web Server and accessed with standard Web browsers, through the Internet or an internal network. This architecture brings all the power of the Web to the management of software testing.

- Distributed access to a centralized repository of requirements, tests, and results
- Repository and reports accessible to developers, testers, and management world-wide
- Security through existing policies and firewalls
- Support for an unlimited number of users
- Support for any desktop platform
- Familiar browser-based look and feel

1.1.2 Test and Requirement Definition, Test Execution, and Reporting

ApTest Manager manages the critical aspects of testing projects:

Test and Requirement Definition. Online specification of the attributes and content of requirements and tests, and the relationships between them. Requirements and tests can be evolved based on design reviews and in response to the evolution of the product under test. Information is immediately available to produce requirement and test specification documents, execute repeatable comprehensive test cycles, and document and compare the results of test runs.

Test Execution. ApTest Manager manages the process manual testers follow in executing test cycles. For each test the tester is presented with the required procedures and associated resources to perform the test, along with a choice of possible results and the ability to attach notes and comments. As each test is completed test results are entered into ApTest Manager. This ensures consistent procedures from one test run to another, whether the same or different personnel perform the testing. Other results can be imported from automated test tools. A consistent set of results are produced and recorded which can be compared for regression analysis.

Test Reporting. As tests are defined and executed ApTest Manager records the tests and results in a permanent database. This information can be used to produce a variety of reports. Reports can show requirement and specification documents, overall project status, test coverage, user productivity, and the results of testing, both for individual test runs and in comparison to other test runs for different product configurations or test environments. Reports may be viewed and printed with a Web browser or exported as CSV or PDF files.

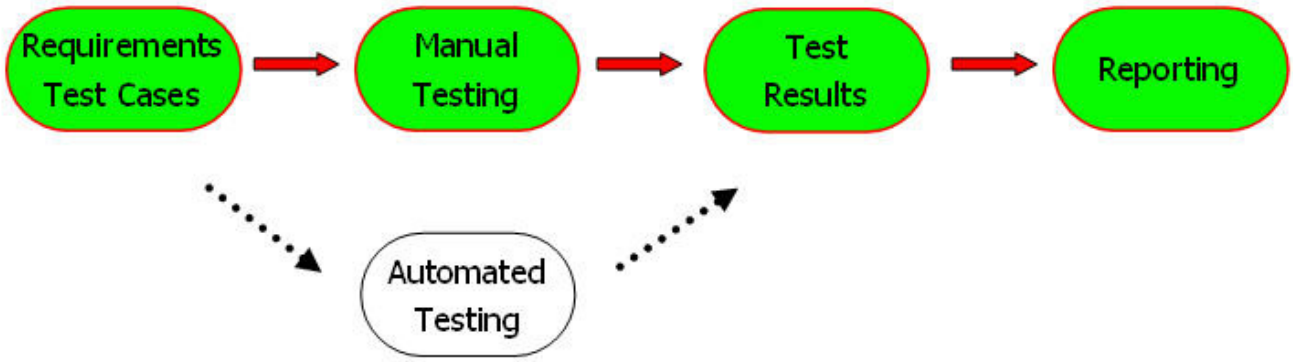


Figure 1 - Features

1.1.3 Tracking Schedules

ApTest Manager can track the planned schedule for executing tests as well as the time actually spent. Reports can show whether testing is ahead of or behind schedule, the expected time needed to complete testing, and individual testers' performance. Time tracking can be customized to reflect the time testers are expected to devote to testing, from 1 to 8 hours per work day.

1.1.4 Bug Tracking Integration

ApTest Manager can be linked to third party Problem Tracking systems to allow problem reports to be filed as product issues are encountered during a project. This provides a convenient method for connecting problem submission to the testing process.

A variety of information can be passed to the Problem Tracking system, allowing problem report creation forms to be filled in automatically by ApTest Manager. Both web-based and application-based Problem Tracking solutions are supported.

Test Case results can be linked to Problem Reports and Problem Reports in the Problem Tracking system can contain links to ApTest Manager allowing developers to view the complete Test Case and to rerun the test to verify a problem has been corrected.

Please see Creating Problem Reports and Recording Problem Reports (Sections 4.3.4 and 4.3.5) for details on using this feature and the *ApTest Manager Admin Guide* for details on configuring it.

1.1.5 Revision Control Integration

ApTest Manager can utilize a third party Revision Control tool to track changes to the requirements

and tests it manages. This feature can be configured during installation of the product and is documented in the ApTest Manager's installation instructions. Changes to Requirements and Tests are automatically entered into the revision control tool, transparently to ApTest Manager users.

1.1.6 Test Automation Integration

ApTest Manager can maintain the requirements and specifications for automated tests, import automated test results generated with third party test tools, and report on these test results.

After automated tests are run, their results are provided to a utility that comes with ApTest Manager that imports the results. This script can be executed from a program, from the command line, or scheduled for execution as a batch job. It pushes test results into an ApTest Manager Test Session, so for instance tests can be run over night and the results will be in ApTest Manager in the morning.

In addition to the results importing script there is a UI based results importing feature. This is described in Section 4.10.6. What both the script and UI features do is take a CSV file of results and place them into a Test Session. The script version can also create a Session automatically. Manual and automated execution and results can be intermingled as desired; results from automation appear just as if they had been entered manually. Standard ApTest Manager features and reports can be used with projects that employ manual testing, automated testing, or any combination of the two.

1.2 ApTest Manager Users

ApTest Manager can be used to automate test management organization-wide.

- Quality Assurance and Quality Control teams can automate their entire testing process.
- Engineering can automate their Unit testing process as well as sharing QA/QC tests.
- Management can monitor and examine the results of testing to assess product reliability.
- Test processes and results can be shared with vendors and customers.
- Team members, including new members as they come on board, have test requirements, specifications, procedures, and results available at their fingertips from their browsers.

As ApTest Manager integrates all these functions under a single Web interface, test information can easily be shared across a user community of any size and geography.

1.3 Concepts

1.3.1 Multiple Test Suites for multiple products

The basic element managed by ApTest Manager is a *Test Suite*. An ApTest Manager Test Suite is a collection of requirements and tests - tens, hundreds, or thousands - and the results of running those tests, once or many times. ApTest Manager can manage an unlimited number of Test Suites for an unlimited number of products. The user can define how tests and requirements are organized and can run tests repeatedly over different product versions and configurations.

1.3.2 Requirements and Test Cases composed of user defined fields

The information associated with a Requirement or a test (a "*Test Case*") is comprised of Fields that can be customized separately for each Test Suite. The following Fields are some of the sample definitions shipped with ApTest Manager. These definitions can be used as is, as a starting point for customizing Fields specific to the needs of a customer, or replaced entirely with user-defined Fields..

REQUIREMENT FIELD	PURPOSE
ID	The name of the Requirement.
Creation Date	The creation date of the Requirement.
Assigned To	The user assigned to author the Requirement.
Priority	The importance of the Requirement.
Type	The scope of the Requirement.
Source	The origin of the Requirement.
Priority	The priority level of the Test Case.
State	Where the Requirement stands in the development process.
Description	The details of the Requirement.
Associated Files	Hyperlinks to additional information associated with the Requirement.

TEST CASE FIELD	PURPOSE
ID	The name of the Test Case.
Creation Date	The creation date of the Test Case.
Assigned To	The user assigned to author the Test Case.
Functional Test Area	The type of testing the Test Case performs.
Test Cycles	The test cycles the Test Case applies to.
Product Versions	The releases the Test Case applies to.
Priority	The priority level of the Test Case.
State	Where the Test Case stands in the development process.
Planned Staff Time	The time it is expected to take to execute this Test Case (in minutes).
Requirements	The requirements verified by the Test Case.
Preconditions and Setup	Set-up procedures or other inputs required to execute the Test Case.
Test Procedure	The procedure to be followed to execute the Test Case.
Verification	Expected product behavior.
Associated Files	Hyperlinks to additional information associated with the Test Case.

ApTest Manager allows for an unlimited number of Requirements and Test Cases per Test Suite, facilitating granular specifications. The level and scope of each Requirement and Test Case is at the discretion of the test developer however and may be as simple or complex as desired.

Test Cases can be linked to Requirements, in one-to-one, many-to-one, and one-to-many arrangements. The use of Requirements is optional. Alternatively Test Cases may simply be defined on their own, with requirements not specified within ApTest Manager, instead maintained externally or simply not used.

Requirement and Test Case names can be numeric values assigned by ApTest Manager, strings entered by the user, or a combination of the two.

1.3.3 Execution of different sets of tests in different test environments

For Test Case execution ApTest Manager supports both executing different groups of tests and compatibility testing in multiple test environments. Individual customers can use these features in their projects as much or as little as they like.

A *Test Set* is a subset of the Test Cases in a Test Suite, selected by a querying of the characteristics of the tests. For example selecting just the tests for a specific product version, product feature, or test requirement.

A project may consist of any number of Test Sets. Sets can be created before the start of a project or any time during it. For example a project may initially lay out Test Sets for a smoke testing cycle, a system test cycle, and testing the new features in the release-under-test; adding additional Sets, focused on testing other product areas or achieving test coverage for example, as the project unfolds.

Once a Test Set is defined the tests it contains can be executed repeatedly.

Each time a Test Set is executed the results are recorded in a *Test Session*. Test Session results can be summarized, viewed, and compared in reports and the Session can be rerun in whole or in part to reverify tests.

Each Session is tagged with the test environment it is run in, facilitating compatibility testing in different test environments. There is no limit on the number of Test Sessions that can be created for each Test Set and, like Test Sets, Sessions can be created before or during a QA project.

Multiple Sessions can be reported on in common, to create for example a project overview report.

Execution of the tests within a Session can be assigned to one or more testers.

A Test Suite can contain multiple testing projects for one or more products, for example projects testing different releases over a product's life cycle; using different Sets and Sessions to select and execute the tests for each release. A regression analysis report can be generated comparing the test results for different releases.

Multiple Test Suites can be used for testing multiple products, allowing for different custom configurations, Requirements, Test Cases, QA teams, etc.

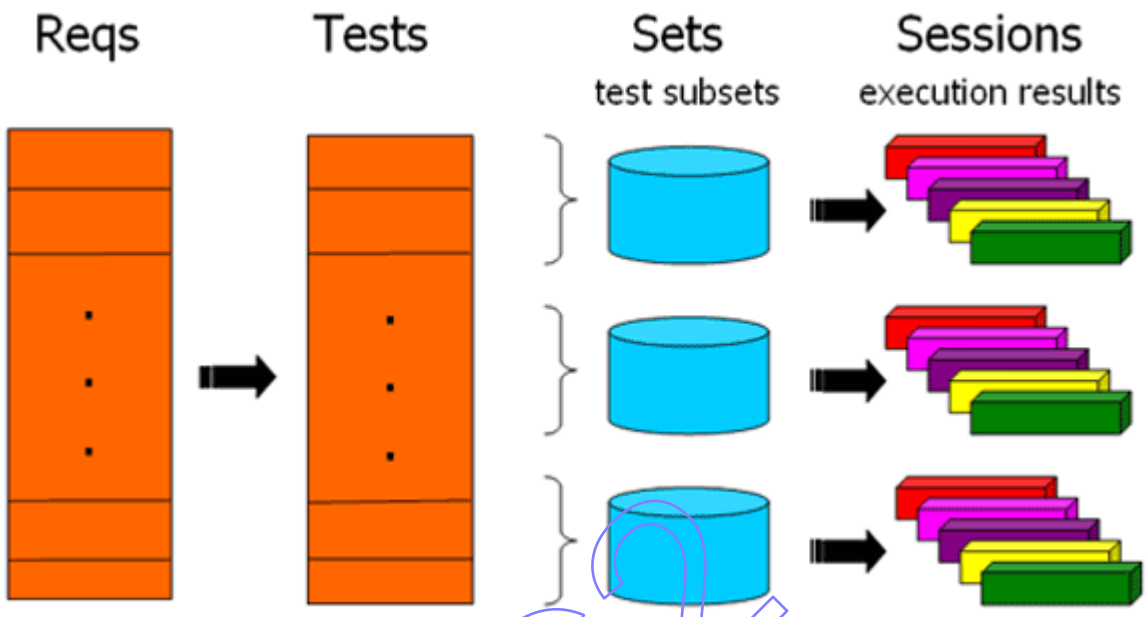


Figure 2 - Example Project

1.3.4 Customization

ApTest Manager is highly customizable. Customization can occur on a per Test Suite basis for both the information stored for the Suite and how it is presented.

ApTest Manager Requirements and Test Cases can have any number of custom Fields from just a few to dozens, and Fields can be formatted in a variety of ways: as text, menus, tables, dates, etc.

Which Requirement and Test Case Fields are shown in ApTest Manager reports can be customized along with how these reports are laid out.

Fields used when a Test Case is executed can also be customized. These are useful for gathering data at run time, such as Problem Reports submitted for the execution of a Test Case.

Attributes associated with Test Sessions can be customized as well. These attributes are known as *Session Variables* and are used to record the test environment a Session is run in, e.g. OS, browser, hardware, and network. Test Sessions can have any number of Variables from just a few to dozens and Variables can be formatted in a variety of ways: as text, menus, etc.

Possible test results can also be customized.

ApTest Manager includes a catalog of predefined Test Suite configurations, known as Profiles. An organization can extend this catalog with additional Profiles to match its testing process. A Test Suite is initially defined using a Profile; it can then be customized further if desired.

This flexibility allows ApTest Manager to be adapted to fit easily an organization's QA process, and for different requirements definitions, test plans, and procedures to be used for different products, all under the ApTest Manager umbrella.

See the *ApTest Manager Admin Guide* for information on customizing Test Suites.

1.4 Test Methodology

ApTest Manager is test methodology neutral. It does not impose a particular process for testing but rather aims to provide a flexible framework within which different processes can be managed.

- Test Requirements and Specifications can be developed either before test procedures or in parallel.
- A Test Suite can be fully defined before it is executed or testing can start small and expand to include more testing later.
- What comprises a Requirement and a Test Case can be fully customized.
- Roles within the test team can be assigned to any number of user accounts.
- Reports can be customized to present appropriate information for users with different roles within the team and the organization.
- Customizing Requirement and Test Case Fields allows configuring a software development life cycle process into ApTest Manager: e.g. a Waterfall process would be configured by defining a state field with different state values that can be given to Requirements and Test Cases as their definition moves through the process.
- Tests for different products are generally kept in separate Test Suites, as different tests are generally needed. Tests for multiple products can be kept in the same Test Suite if desired, using different Test Sets and Sessions to select the tests to be used in testing each product. The former approach allows different configurations to be used for each product's tests; the later allows reports to span testing of multiple products. Which approach or combination of approaches to use is at the discretion of the customer.

1.5 Operation

ApTest Manager is operated from a Web browser. The ApTest Manager User Interface offers a familiar Web look and feel: a series of screens navigated by clicking on links between them. This makes learning to use ApTest Manager easy – a user that has surfed the Web will be comfortable with ApTest Manager immediately.

ApTest Manager offers more sophisticated functionality by far than your average Web site. For one thing, ApTest Manager keeps track of what is being worked on between screens. What Test Suite is

being worked on, the user name, and alike only need to be entered once. ApTest Manager also stores information permanently for each user, for instance the reports a user likes to see.

Most importantly, ApTest Manager creates and stores a repository of information about requirements, tests, and the results of running tests. ApTest Manager provides screens to enter, modify, query, examine, and compare information from this repository. Files associated with requirements and tests can also be uploaded into this repository: for example screen shots showing expected results or product documentation. Links in requirements and tests can be established to these additional files as well as to WWW pages, other programs, etc.

ApTest Manager also allows sharing of information between users across an organization. For example, a developer might use ApTest Manager to define a set of requirements and tests that a test engineer uses ApTest Manager to run in order that a QA manager can ask ApTest Manager to compare the results to those run on a previous product version.

All in all ApTest Manager provides a comfortable Web-based interface to a rich set of features for managing the testing process across an entire organization.

1.5.1 Database

The database that underlies ApTest Manager is based upon the Berkeley DB from Oracle Corporation "the most widely used open source developer database in the world with over 200 million deployments".

This database is bundled with ApTest Manager and no additional database software needs to be acquired. As well no user administration of the ApTest Manager database is necessary - database installation, configuration, and maintenance are performed transparently to the user by ApTest Manager.

Data may optionally be mirrored in an external relational database management system and queried with the Structured Query Language (SQL) . Several Open Source and commercial RDBMS products are supported. See the *ApTest Manager Admin Guide* for details.

Chapter 2

2 Using ApTest Manager

ApTest Manager offers a simple yet elegant WWW-based user interface, comfortable to anyone who uses a Web browser to surf the Web. Simply point a browser toward ApTest Manager to get started.

2.1 Browser Requirements

Internet Explorer, Netscape, and Firefox browsers can all be used with ApTest Manager. Specific requirements are a browser that supports HTML 4.0 (or higher) or XHTML 1.0 (or higher), Frames, and Javascript 1.1. A browser must have cookies enabled in order to use ApTest Manager.

When using Internet Explorer and Excel 2002 and above, right clicking on a screen and selecting Export to Microsoft Excel causes the screen to be exported, in whole or in part, to an Excel Spreadsheet.

2.2 Licensing

An ApTest Manager license provides a specific number of seats. Each seat allows one user to be logged in to ApTest Manager at any given time.

If more users want to work with ApTest Manager than the number of licensed seats, ApTest Manager tells them that the number of logged in users would be greater than the license allows. If users log out of ApTest Manager or are idle for a while their seat becomes available for others to use.

Additional seats may be added to a license at any time.

2.3 Printing

The content of an ApTest Manager screen may be printed directly from a Web-browser, using *Files -> Print* or *[Ctrl] [P]*, to a printer, a PDF file, etc. This generally allows setup of items such as the page

header and footer. Please consult a system administrator or the browser's help menu if difficulties with printing are encountered.

2.4 Warnings and Errors

ApTest Manager Error messages look like:

You must specify a Test Case name.

ApTest Manager Warning messages look like:

This test session is locked!

2.5 Logging In

The Login screen requires a User name and Password for an existing ApTest Manager account be supplied for a user to access ApTest Manager.

Depending on the configuration of an ApTest Manager installation a link may be provided on the Login screen to allow users to create their own accounts. If this feature is not enabled an ApTest Manager Administrator can create new user accounts.

2.5.1 Passwords

ApTest Manager can store passwords in encrypted form or in clear text. This is selected at installation time.

2.6 Selecting a Test Suite

The first time a user logs into ApTest Manager the user selects a Test Suite to work with from the Test Suite selection screen.

As discussed in Chapter 1, a Test Suite is the basic element managed with ApTest Manager, consisting of Requirements and Test Cases and the results of executing them.

How many Test Suites a user has to choose from depends on how an organization is using ApTest Manager and may be one, many, or anything in between. It also depends on what Test Suites the user has permission to access. Test Suites a user does not have access to are not visible to that user.

For each Test Suite a user can access ApTest Manager shows the Suite name and description. The user clicks on a Test Suite name to work with that Suite and can then define requirements and tests, execute tests, and view test reports for the Suite, depending on the user's access level for a Suite.

The user works with the Test Suite they select until they select a different Suite by clicking the  icon to return to the Test Suite selection screen.

2.6.1 Creating a New Test Suite

When a new suite is needed is a function of an organization's testing process and the number of products for which testing is managed with ApTest Manager.

From the Test Suite selection screen click **Create a New Test Suite** to reach the Create Test Suite screen and enter a name and a brief description for the new Suite.

Select a Profile to define how the new Test Suite is to be configured. Click **Create Test Suite** to have an empty Suite created with the selected configuration.

ApTest Manager comes with a catalog of predefined Test Suite configurations known as Test Profiles that specify different features such as:

- Requirements support
- Multi-Step tests
- Requirement and test auto-numbering

The catalog may also contain Profiles specific to an organization's test process that are created by its users. User-defined Profiles may be created by saving custom Test Suite configurations in the Profile catalog for re-use in future projects' Test Suites. ApTest-provided Profiles are based on the IEEE 829 standard for test documentation.

A Test Suite's configuration can be modified after it is created to customize it further. See the *ApTest Manager Admin Guide* for details on Suite configuration.

2.6.2 Access Permissions

Each ApTest Manager user has a separate level of access to each ApTest Manager Test Suite.

An ApTest Manager Administrator may configure specific access levels for a user to different Test

Suites. Depending on what their access level is for a Test Suite a user can access different ApTest Manager features for working with that Test Suite.

Eight different access levels are supported for each Test Suite:

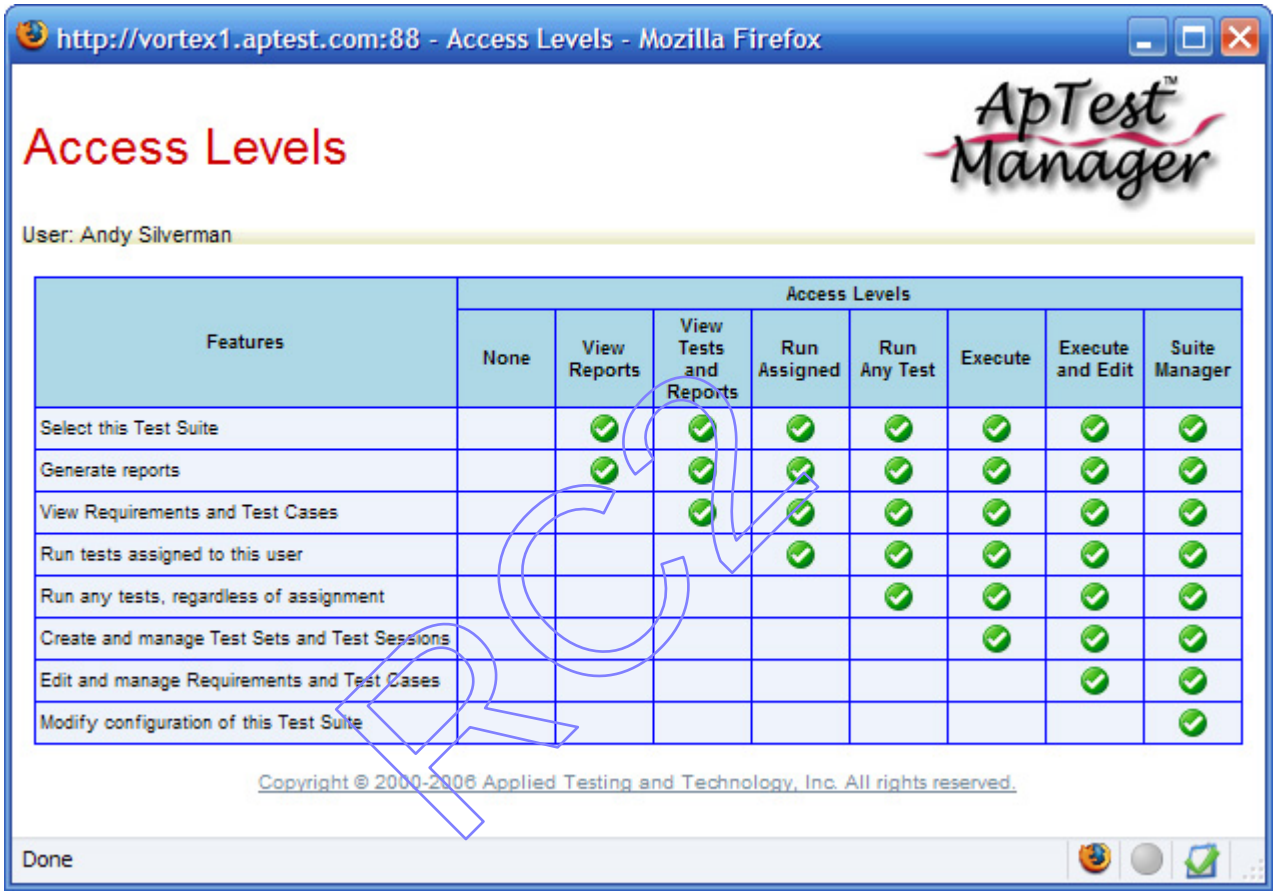


Figure 3 - Test Suite access levels

2.7 User Interface

2.7.1 Screen Layout

Figure 4 shows the Select an Operation screen that is displayed after a Test Suite is selected or created. From this screen the main ApTest Manager operations can be selected:

- Reqs or Tests to create, modify, and search the requirements and tests that make up the current Test Suite. This is discussed in detail in Chapter 3.

- Run to execute the current Test Suite. This is discussed in detail in Chapter 4.
- Report to generate reports of the status and results of testing projects. This is discussed in detail in Chapter 5.

A different Test Suite to work with may also be selected, as discussed above, and the current Test Suite can be managed. See the *ApTest Manager Admin Guide* for details on Suite management.

The layout of the Select Operation screen is common to the screens in ApTest Manager:

- Logo – Clicking the ApTest Manager logo brings up ApTest's home page on the WWW.
- Screen Title – Each ApTest Manager screen has a title describing it.
- Menu Bar – The menu bar provides icons to select among the Reqs, Tests, Run, and Reports functions for editing Requirements, editing Test Cases, executing Tests, and generating reports. There are also icons to select a new Test Suite, manage and configure the current Test Suite, and display ApTest Manager on-line Help. Icons for features a user does not have permission to access contain a red x and may not be selected.
- Suite Bar – The suite bar shows the user's name, the current Test Suite, and the user's level of access for the Test Suite.
- Content Area – The content of the screen is placed here.
- Copyright– Clicking this link displays the version of ApTest Manager and legal information.

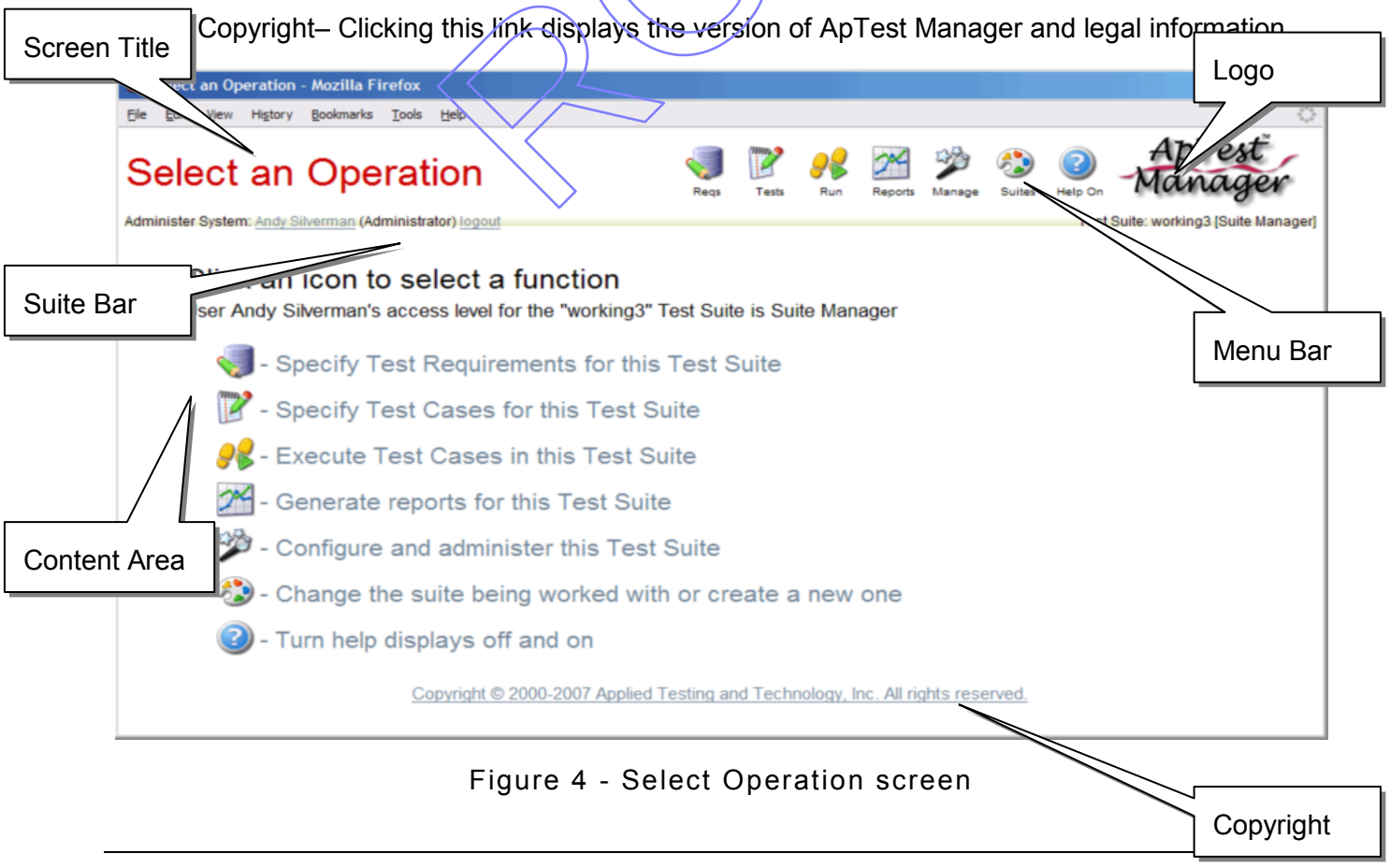


Figure 4 - Select Operation screen

2.7.2 Navigation

When an operation from the Menu or Suite Bars is selected the current screen is replaced with a new screen or a new child window is opened, depending upon the nature of the operation.

Child windows may be closed without saving changes by clicking the close button in the upper right corner of the child window or from screen-specific navigation buttons.

Clicking on the Username on the Suite Bar brings up the Edit Account Information screen which allows modification of the information entered when the account was created and deleting the account. Some features may be restricted depending on access level and system configuration.

ApTest Manager Administrators can specify the access that user accounts have to individual Test Suites as well as administer product-wide configuration. Administrative functions are described in the *ApTest Manager Admin Guide*.

2.7.3 User Interface Styles

Once a user has logged in and selected a Test Suite the user works with ApTest Manager to Edit Requirements, Edit Tests, Run Tests, View Reports, and Configure the Test Suite.

Two common styles of user interface are used in Requirement definition, Test Case definition, Test Case execution, and reporting. This makes ApTest Manager easy for a user to get familiar with.

- Folder trees. There is a separate tree containing Test Requirements, another containing Test Cases, and a third for Test Sets.

  A tree is displayed and manipulated with a user interface employing two side-by-side frames. This interface is similar to the familiar "Explorer" view native to the Windows platform. A sample screen displaying a Test Case tree with a Folder selected in the left frame and its content in the right is shown in Figure 5.

- Tables of Sessions. There is a table for selecting a Session to be executed and another for selecting Sessions to report on. The Sessions in a table can be filtered by one or more characteristics, such as the dates Sessions were run, how complete they are, the test environment they were run in, etc.

  An example of the Session table on the Run Tests screen showing Test Sessions for a particular drop is shown in Figure 6.

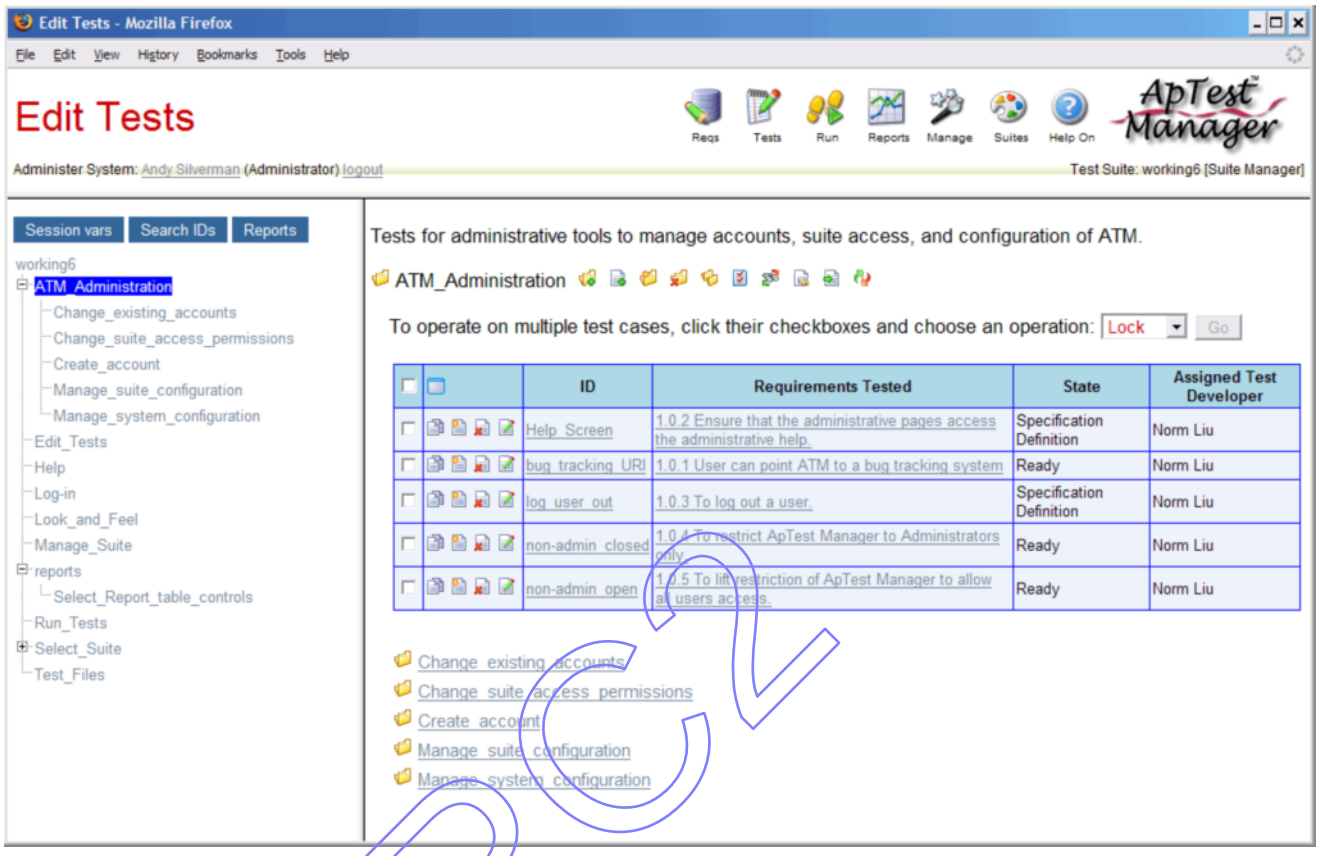


Figure 5 - Test Case tree

2.7.4 Table Configuration

Many of the tables in ApTest Manager can be configured to show different columns of information. This allows the table to be customized for the interests of each user and to be made to fit comfortably on the user's screen. Click the icon in a table's header row to configure the information shown in the table.

2.7.5 User Settings

When users work with ApTest Manager the settings they select, such as table sorting, folder selection, table configuration, etc., are saved on a screen-by screen basis. The next time the user returns to a screen the same settings will be used to display it.

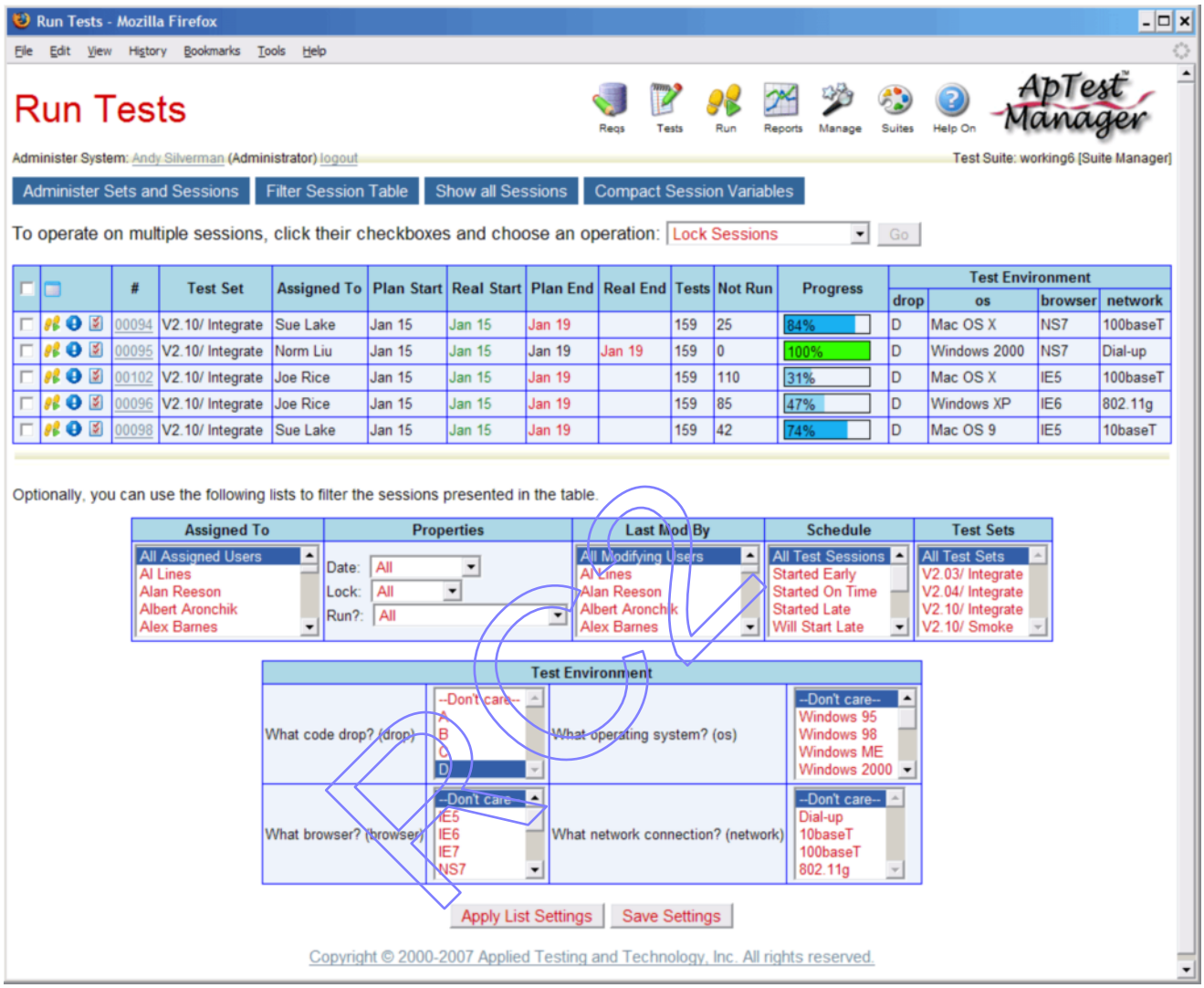


Figure 6 - Test Session table

2.7.6 Help

ApTest Manager provides on-line Help on a per-screen basis. Help is displayed on the right side of most screens. The Help display may be turned off and on by clicking the icon. New users may wish to have Help displayed all the time. Experienced users may choose to keep Help off to conserve screen real-estate, only turning it on for reference.

Per-screen Help contains a link to a more complete on-line product overview.

2.7.7 Pagination

Many screens in ApTest Manager that would be very long can be broken into multiple pages.

The `Rows per Page for reports` configuration setting controls how many items can be on a screen before it is paginated. If a user has the necessary access the user can change this value by clicking on the Username on the Suite Bar.

If a screen is paginated it contains controls that allow the user to move among the pages of the paginated screen: to go to specific pages or the next/previous page.

Pagination applies to most ApTest Manager reports as well as to the screen for running multiple tests at once. Paginated reports include a link to a printable version, containing the entire unpaginated report.

2.7.8 Form Submission

Many ApTest Manager screens contain forms that are submitted by clicking associated buttons. These buttons are inoperative and appear 'grayed out' while a screen is loading and while it is being submitted. This mitigates problems that can occur if forms are submitted before loading is complete or are submitted more than once. Using a form that is not yet fully loaded may result in unpredictable behavior. Always wait until the form is done loading before operating any form controls or entering any form data.

2.8 Quick Tour

2.8.1 Edit Requirements and Tests

The trees of Requirements and Test Cases are populated and managed by selecting a Folder in the left hand frame and then one of the icons in the right-hand frame for the Folder or one of the Requirements or Test Cases within it. Requirements and Test Cases are structured as a number of Fields, which can be customized separately for each Test Suite, presented as a form on a Web browser.

Test Cases can be linked to Requirements, in one-to-one, many-to-one, and one-to-many arrangements, when they are edited.

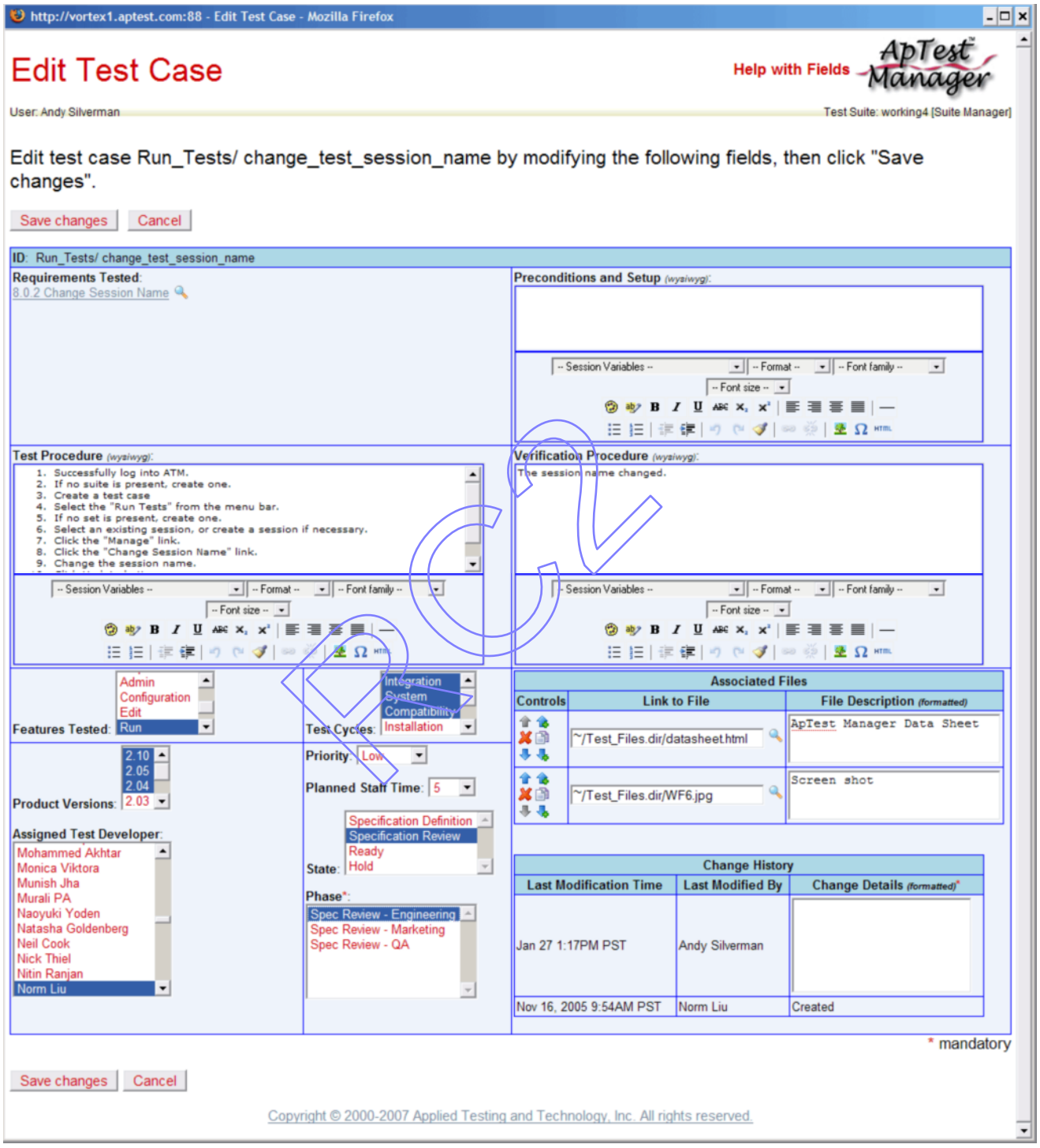


Figure 7 - Edit Test Case screen

2.8.2 Run Tests

Test execution with ApTest Manager revolves around Test Sets and Test Sessions. A Test Set is a subset of the Test Cases in a Test Suite. A Test Session contains the results of running the tests in a Test Set in a specific test environment. Test Sets are kept in a Folder tree and used to create Test Sessions to execute the Tests Cases in the Sets in different test environments. Test Sessions are displayed as a Session table.

When a user selects a Test Session to be run the Test Cases in that Session are presented so the tests can be performed and results provided to ApTest Manager. Test Cases may be presented one at a time or multiple tests may be presented at once. Sample screens for running Test Cases are shown in Figure 8 and Figure 9.

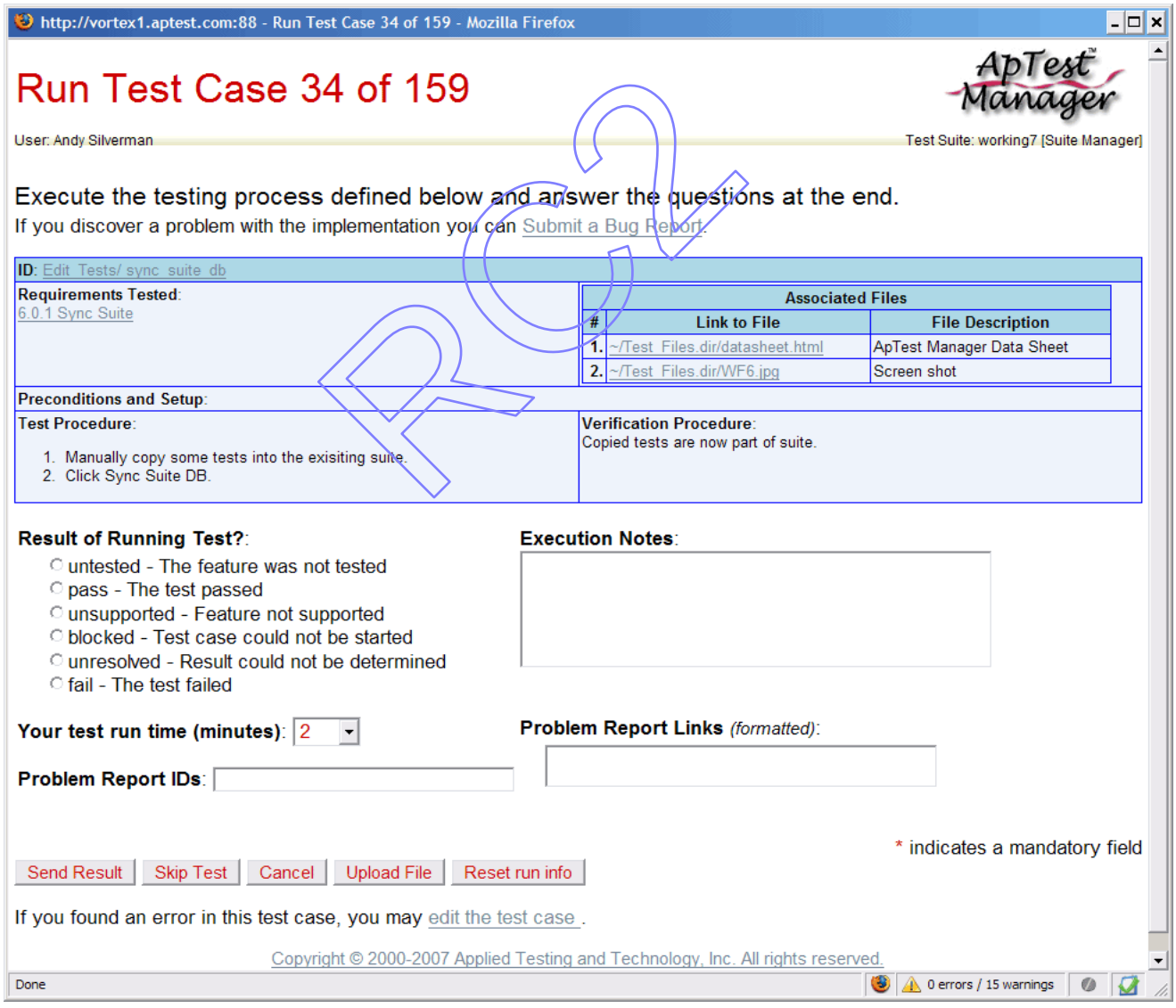


Figure 8 - Run Single Test Case screen

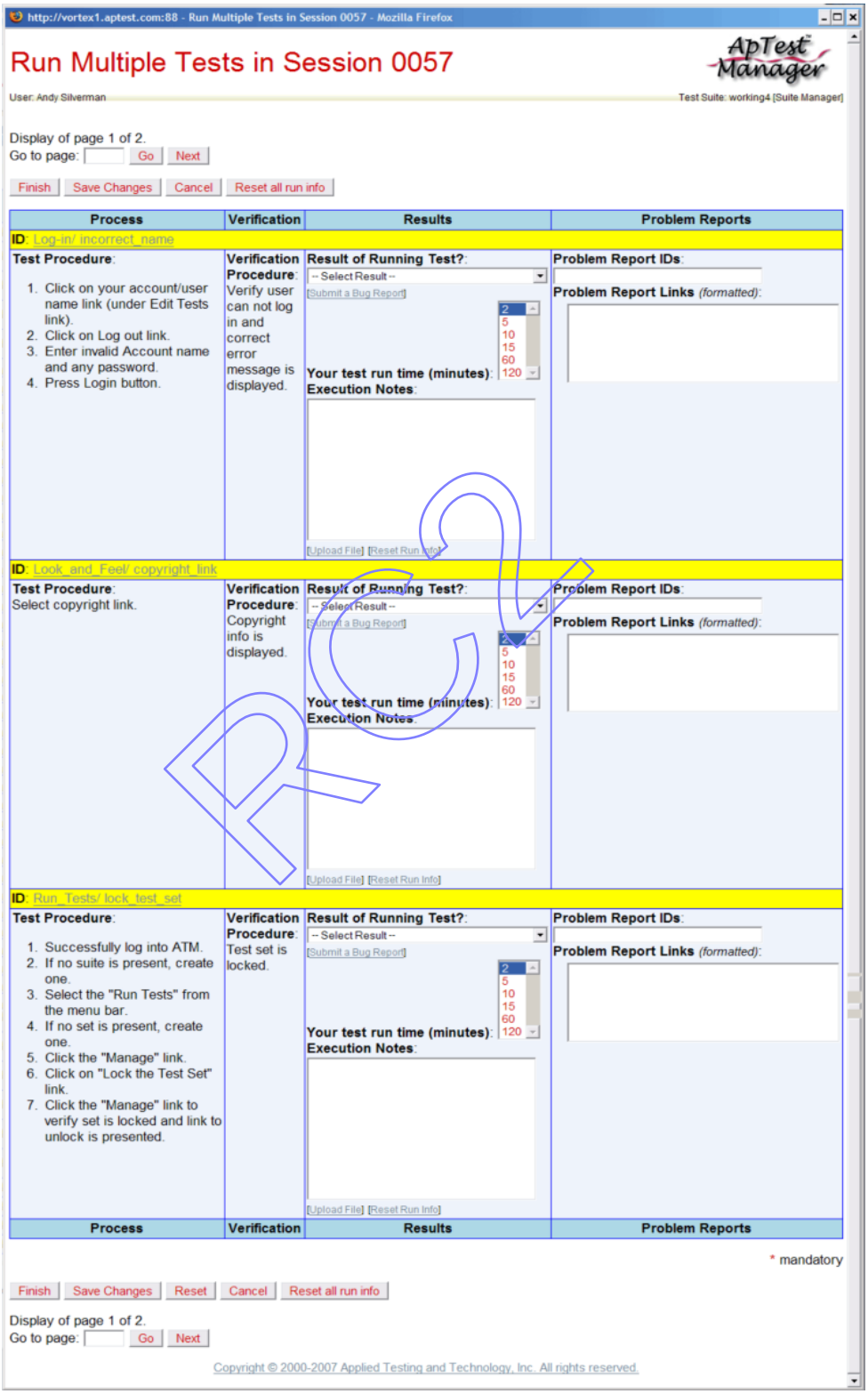


Figure 9 - Run Multiple Test Cases screen

2.8.3 View Reports

ApTest Manager provides instantaneous access to reports on testing projects. Both information about Test Cases and the results of executing them can be retrieved and viewed.

Reports are generated for one or more Test Sessions, selected from a Session table as shown in Figure 10.

There are a number of reports available:

- Progress Report – Shows the current status of testing for all or part of a project, including planned versus actual schedules. A portion of a Progress Report is shown in Figure 11.
- Regression Report – Compares the results of different Test Sessions.
- Users Report – Shows the work performed by individual testers for a project.
- Coverage Report – Shows how well testing is covering the tests defined.
- Schedule Report – Shows planned and actual Session start and end schedules.
- Templated Reports – An unlimited number of report templates may be defined for reports for Requirements and for execution of a single Test Session. These templates specify the Fields that are shown and how they are presented (e.g. as a spreadsheet, a series of tables, etc.). If a user has a suitable level of access to a Suite the user can modify, add, or delete the available templates by clicking the Manage icon.

In addition to being displayed as HTML many reports can also be exported in CSV format for further processing with applications such as Excel. Use the Customize Report screen to request a CSV report. Reports can also be printed to PDF and saved as HTML (see Section 6.1.8)

Reports can be produced for entire Sessions or, by queries that specify groups of tests based on the values of Requirements and Test Case Fields.

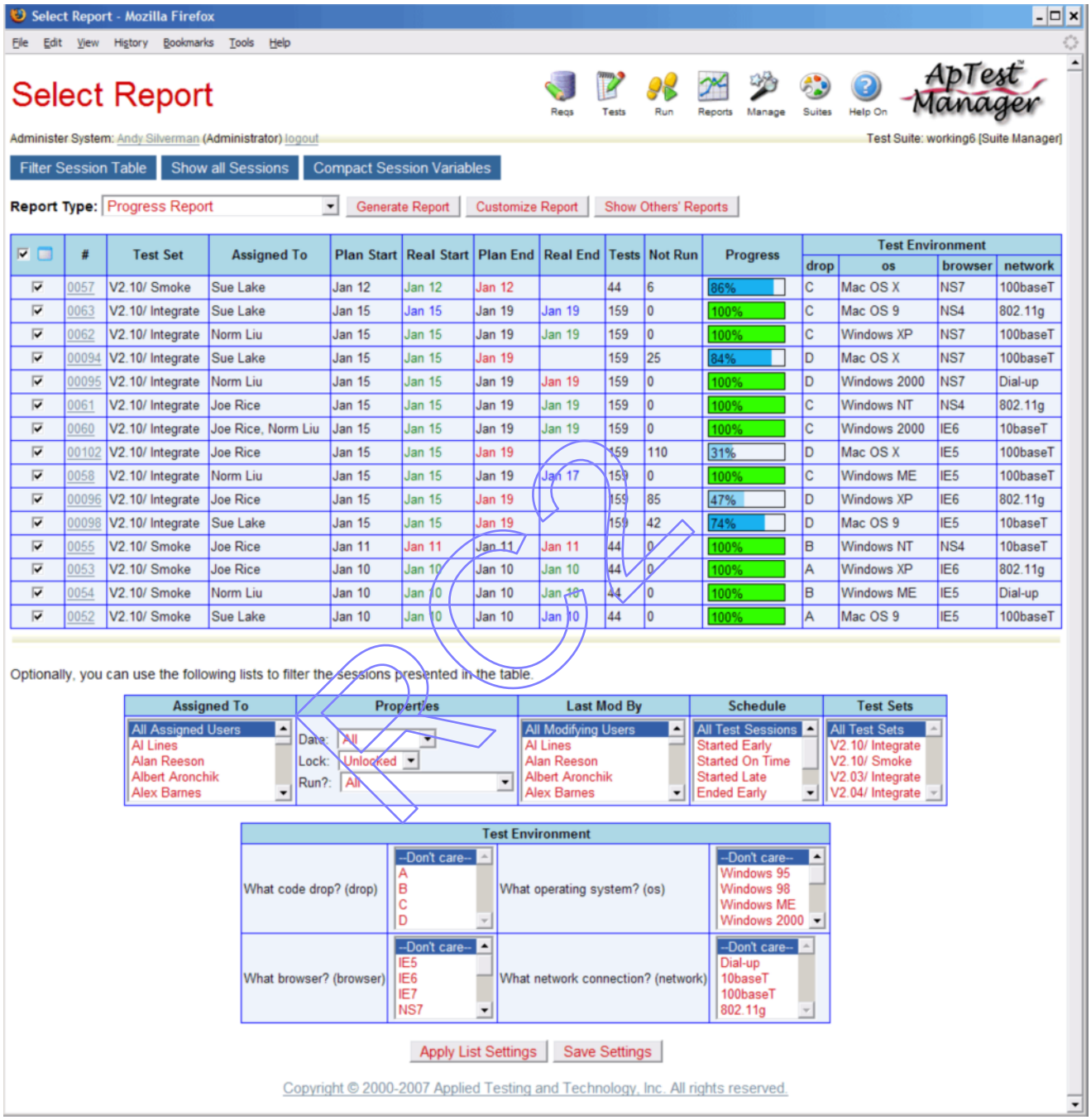


Figure 10 - Report Selection screen

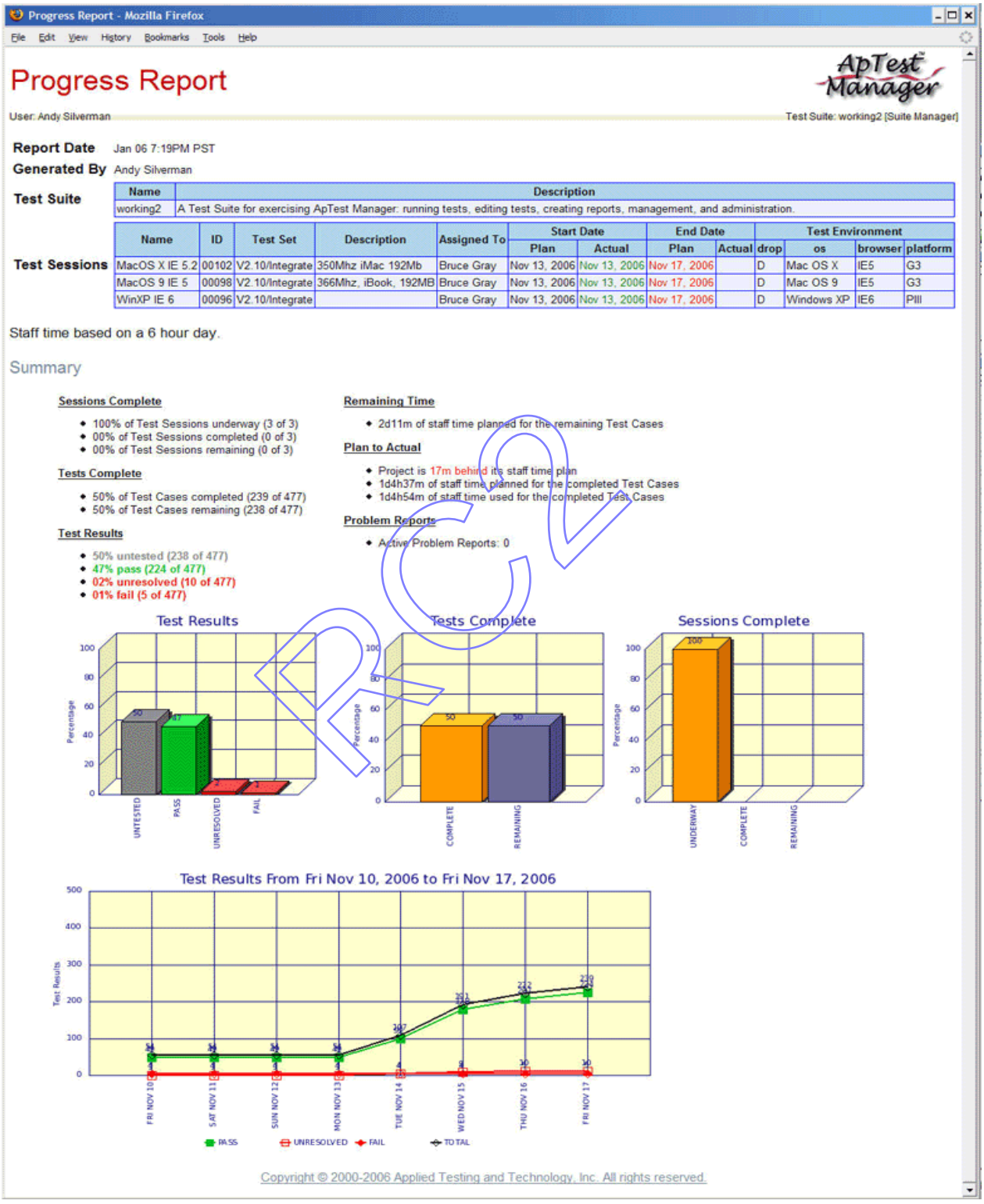


Figure 11 - Progress Report

2.9 Timezones

The timezone matters when looking at a timestamp, i.e. a date and time value. Timestamps are shown for date/time values in Test Case Fields and when displaying the last time Test Sessions were modified for example.

A timezone may be specified separately for individual users, allowing timestamps to be displayed to each user in their local time.

A default timezone for all users may be specified (see the *ApTest Manager Admin Guide* for details); this is set initially the timezone of the server.

In most cases dates are shown without the year (e.g. Feb 02 5:55PM PST) if they occur in the current year. Dates occurring in other years have the year shown (e.g. Nov 13, 2006 1:43PM PST).

2.9.1 Time styles

Time may be displayed in 24-hour or 12-hour format on a per user basis. This style defaults to a global configuration setting (see the *ApTest Manager Admin Guide* for details.).

2.10 Email Notifications

ApTest Manager can automatically send emails to users, triggered by a variety of events, shown below. Email notifications can be enabled on a per Test Suite basis for individual users for each event. See the *ApTest Manager Admin Guide* for details.

Name	Trigger Events
Requirement changed	Requirement created, copied, deleted, or modified, or Requirements imported
Test Case changed	Test Case created, copied, deleted, or modified, or Test Cases imported
Suite configuration changed	Requirement/Test Case Fields, result codes, Execution Fields, or Session Variable definitions changed
Suite template file changed	Editing, execution, or reporting templates modified
Set changed	Set created, copied, deleted, modified, or refreshed

Session changed	Session created, copied, deleted, modified, or refreshed
Session started	Session execution started. If a start schedule is defined for the Session indicates if execution started on schedule.
Session completed	All tests in a session executed. If am end schedule is defined for the Session indicates if execution ended on schedule.
Tests assigned	Any test assignments made or changed
Tests assigned to/from user	Tests assigned to, or away from, this user
Global notifications – Administrators Only	
Suite changed	Test Suite created, copied, deleted, or renamed
System configuration changed	Any change to the system configuration, including an SQL connection problem being encountered
System Alert	Login or user lockout due to license contention; run time error messages
Update Available	A newer version of ApTest Manager is available to support customers
User changed	User account created, deleted, or modified

2.11 Making Backups

ApTest Manager can be backed up using standard OS or third-party backup tools. The best way to backup ApTest Manager is to backup all the files in the directory tree starting at the root of the ApTest Manager installation. See the *ApTest Manager Admin Guide* for additional information.

Chapter 3

3 Defining Requirements and Tests

The previous chapters introduced the features and basic operation of ApTest Manager. This chapter describes the details of using ApTest Manager to define and evolve Test Requirements and Test Cases.

There are separate areas within each Test Suite for working with Requirements and Test Cases. These areas each use the Folder Tree style of user interface (see Section 2.7.3) and operate very similarly.

Click the Reqs or Tests icon on the ApTest Manager Menu Bar to get to one of these areas. Depending on a user's access level for a Test Suite the user may only be able to view but not modify requirements and tests, or may not have access to these areas of ApTest Manager at all.

The specification of Requirements is optional.

Requirements may be defined and Test Cases can be linked to Requirements that they fulfill, in one-to-one, many-to-one, and one-to-many arrangements. Alternatively Test Cases may simply be defined on their own, with requirements not defined within ApTest Manager, instead maintained externally or simply not used at all. The ApTest Manager Requirements tree is available in Test Suites created with some Profiles and not others. To convert an existing Test Suite to employ a separate Requirements tree see the *ApTest Manager Admin Guide*.

3.1 Test Suite Development Models

ApTest Manager allows Requirement and Test Case information to be created at any time and revised later. This allows a great deal of flexibility in the model used for test development, accommodating the traditional "Waterfall model" and alternatives as different as Extreme Programming. For example:

- Requirements can be created and populated initially, before any Test Cases. A Test Requirements report can then be produced which can be reviewed and iterated on before the definition of the tests. Once Requirements are settled on ApTest Manager can automatically create corresponding Test Cases.

- Test Cases can be created and partially populated initially, e.g. with just their descriptions and Requirement links. A Requirements Coverage report can then be produced which can be reviewed and iterated on before defining the procedures to be used to implement the tests.
- A Test Suite can be fully populated with Requirements and Test Cases. A Test Specification report can then be produced which can be further reviewed and iterated for test coverage and methodology.

Different portions of a Test Suite can be worked on at different rates of speed; different functional areas moving through a review cycle at different times for example.

3.2 Requirement and Test Case Trees

ApTest Manager organizes and displays requirements and tests in trees. A tree is composed of Folders that contain Requirements or Test Cases and files; much like a computer file system is organized. Folders are used to group together related Requirements/Test Cases.

The Folder tree may be as deep and as wide as desired; any number of Requirements/Test Cases, files, and Folders can be placed in Folders at any level of a tree. Additional Folders, files, and Requirements/Test Cases may be added at any time.

Folders and Requirements/Test Cases can be named as desired, according to an organization's policy of choice, and can be automatically numbered if desired. Folders are often named for functional areas, such a "Billing module", and contain the Requirements/Test Cases for that area, possibly grouped into sub-folders for sub-areas. Requirements and Test Case names are often based on the functionality they cover, for example a Requirement that a product provide a help screen and a Test Case that verifies this.

Each tree is specific to a Test Suite – each Test Suite has its own trees that contain the Requirements, Test Cases and files for that Suite. The trees displayed are that of the current Test Suite. Click on the  icon to work with the Requirements and Test Cases from a different Suite.

This mechanism is very flexible and Test Suites can be structured in a wide variety of ways. A completely flat test structure can be employed in which all Requirements/Test Cases in a tree are placed in a single Folder. At the opposite extreme small groups of related Requirements/Test Cases may be placed in separate Folders, which themselves may be grouped within other Folders based on common characteristics. Keeping the tree from being too deep or wide is desirable for readability. It is also beneficial to keep Folder and Requirement/Test Case names reasonably short, yet adequately descriptive

3.2.1 Navigation

A tree is displayed and manipulated with a user interface employing two side-by-side frames. This interface is similar to the "Explorer" view native to the Windows platform.

Use the browser scroll bar, if shown, to scroll a frame upward or downward.

The left-hand frame shows the Folders that comprise the tree and allows individual Folders to be selected. The right-hand frame shows the contents of the currently selected Folder.

A sample screen displaying Requirements Folders in the left frame and the contents of a Folder in the right is shown in Figure 12. In this example the Folder “Edit Tests” has been selected from the left-hand frame, causing the right-hand frame to display the Requirements contained in the Folder.

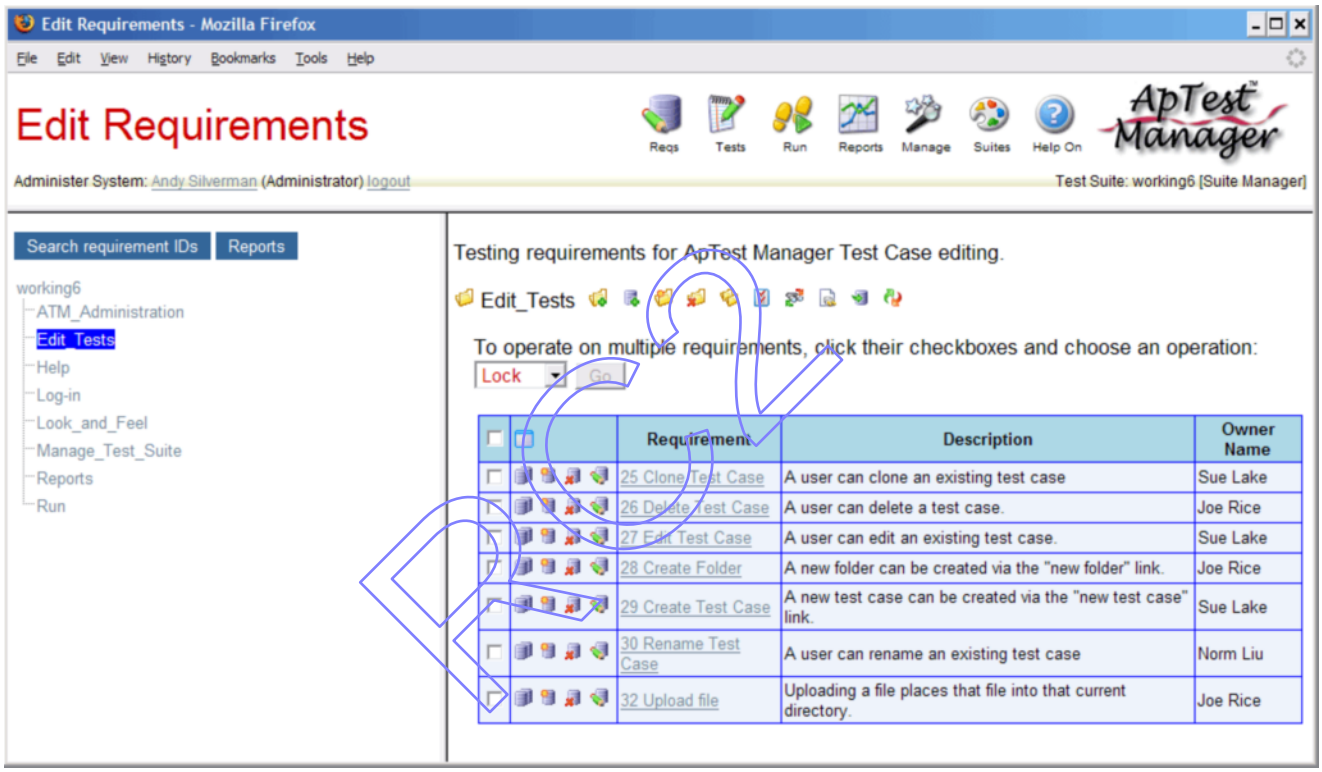


Figure 12 - Requirements tree

The name of the Test Suite appears as the top link of the tree in the left-hand frame.

The left hand frame also allows generating reports for the Requirements/Test Cases in the tree, and (for the Test Case Tree only) viewing the Session Variables defined for the Test Suite.

A button above the Test Suite name in the left hand frame allows searching the Requirements/Test Cases in the tree based on their ID. Any matching Requirements/Test Cases are displayed in a table in the right hand frame, regardless of the folder they are in. If the plain ID style is used the search string can be alphanumeric, “customize’ for example. If an ID autonumbering style is used Requirement/Test Case IDs are numeric and tests are selected based on numeric search strings.

To search other parts of Requirement/Test Case names (see Section 3.5) the Search and Replace feature is used (see Section 3.3.1).

The  icon precedes the name of the Folder displayed in the right-hand frame. This is followed by a series of icons for working with Folders. Below the Folder name is a table of the Requirements/Test Cases in the Folder followed by any files in the Folder and any sub-Folders it contains.

Each row in the table contains information for an individual Requirement/Test Case. Icons are provided for renaming/moving the Requirement/Test Case, deleting it, copying it, and editing it. The user must have an appropriate level of access in order for these icons to be shown. The name of the Requirement/Test Case is shown and displays the Requirement/Test Case when clicked.

The columns displayed in the Requirement/Test Case table can be configured by clicking the  icon in the table header. The Configure Table screen allows each Requirement/Test Case Field defined for this Test Suite (other than Fields in table or Change History Fields) to be included in the table. It is advisable for readability to display a modest number of Fields in this table. The Fields selected will persist for this user, until different Fields are selected.

By default Requirements/Test Cases within a Folder are in alphabetical or numeric order, depending on whether automatic numbering is configured for them (see Section 3.5). Tests can be arranged within a Folder in any order desired (see Section 3.3.4).

A Requirement/Test Case table can be sorted by different columns by clicking on a column name. Clicking the name again reverses the sort order. Please note that sorting this table has no permanent effect on the order of Requirements/Test Cases within a Folder or within Test Sets or Test Sessions. It merely changes the sorting of the table - temporarily and for this user only.

3.2.2 Collapsing and Expanding a Tree

A tree can be collapsed and expanded to vary the amount of the tree that is shown. This feature is especially beneficial when navigating through large multi-layer trees.

A '+' is displayed to the left Folders which have further levels of Folders defined within them. Clicking a '+' causes the display of these sub-Folders. The '+' associated with a Folder is changed to '-' when the Folder contents are displayed. Clicking the '-' collapses that portion of the tree.

3.2.3 Generating Reports from the Edit Screen

For convenience, Templated reports can be generated from the Edit Requirements and Edit Tests screens. These are reports that can be generated for Test Sessions from the Reporting area, but here they apply to the Requirement/Test Case tree. This provides reports for things like Requirements and Test Case specifications and traceability matrices, independent of test execution.

The Reports button above the tree in the left hand frame displays a pull-down menu of templates and saved custom settings for them to select from. For Test Cases this includes those templates that do not contain any execution information (and which can thus be applied directly to the Test Case tree). See Section 5.4 for details about templated reports.

3.3 Working with Requirement and Test Case Trees

Requirement and Test Case trees are populated and managed by selecting icons in the right-hand frame for the current Folder or one of the Requirements, Test Cases, or files within that Folder. The Test Suite itself is the top level of the tree; other Folders and Test Cases are beneath it.

Click one of the icons to the right of the current Folder in the right-hand frame to manage the current Folder or add new Folders and Test Cases to it.

- Click  to create a new Folder within the current Folder (Section 3.4).
- Click  to create a new Test Case or  to create a new Requirement (Section 3.6).
- Click  to rename/move the current Folder within the tree (Section 3.8.4).
- Click  to delete the current Folder (Section 3.8.5).
- Click  to copy the current Folder elsewhere in the tree (Section 3.8.3).
- Click  to revise the description and lock/unlock the current Folder (Section 3.8.2).
- Click  to search for strings within Requirement/Test Case Fields and replace them with other strings (Section 3.3.1).
- Click  to upload a file into the current Folder (Section 3.3.2).
- Click  to import Test Cases or  to import Requirements (Section 3.3.3).
- Click  to reorder the Requirements/Test Cases in the current Folder (Section 3.3.4).

Click a **Requirement/Test Case name** to view the Requirement/Test Case. Click one of the icons to the left of a Requirement/Test Case name in the right-hand frame to edit, rename, copy, or delete a Requirement/Test Case.

- Click  to rename/move a Test Case or  to rename/move a Requirement (Section 3.8.7).
- Click  to delete a Test Case or  to delete a Requirement (Section 3.8.8).
- Click  to copy a Test Case or  to copy a Requirement (Section 3.8.6).
- Click  to edit a Test Case or  to edit a Requirement (Section 3.7).

Click the **File name** to view a file. Click one of the icons to the left of a file name in the right-hand frame to rename, copy, or delete a file.

- Click  to rename/move a file (Section 3.8.11).
- Click  to delete a file (Section 3.8.12).
- Click  to copy a file (Section 3.8.10).

Files must be edited with the tool that created them; they cannot be edited with ApTest Manager.

3.3.1 Search Requirements/Test Cases

To search for strings within Requirements/Test Cases click the  icon. The Search Requirement and Search Test Cases screens allow searching Requirements/Test Cases for data in their Fields and optionally replacing matching data.

By default Requirements/Test Cases in the current Folder and any sub-Folders are searched. Deselect **and sub-folders** to only search Requirements/Test Cases in the current Folder. Search may also be used to search the Requirements/Test Cases resulting from a **Search requirement/test case IDs** operation.

One or more Fields to be searched, a pattern to search for, and if **Search and replace** is clicked a string to replace matches in the Requirements/Test Cases may be specified. Click **change** to modify the list of Fields to be searched. All Fields are included on this list except for Fields of type ID, table (though Fields in the table may be searchable), user, muser, cdate, mdate, date, and modification history table (though Fields in the table may be searchable).

By default the search pattern is a simple string but if **Perl regular expression** is selected a regular expression may be used. Click **Help with Regular Expressions** on this screen's Help panel for details. For example:

- To match all Requirements/Test Cases with any content in a Field, including none, use an RE of ^.*$
- To match all Requirements/Test Cases with some content in a Field, use an RE of ^.+$
- To match all Requirements/Test Cases with no content in a field, use an RE of ^$

Click **Search** or **Search and replace** to perform a search or search and replace operation.

Note that Search and Replace replacements are permanent and can NOT be undone. If **confirm replacements** is selected the names of the Requirements/Test Cases in which matches were found are displayed. Click the name to see the Requirements/Test Cases with the matched strings highlighted before replacements are made. Click **Confirm replacements** to make the changes. Otherwise, modify the search string and perform a new search and replace operation.

After a search or search and replace operation the names of the Requirements/Test Cases in which matches were found are displayed. Clicking a Requirement/Test Case name displays the

Requirement/Test Case. For a search operation the matches are highlighted. For a search and replace operation the replacements made are highlighted.

When changing values for a menu Field the replacement value must be a valid menu item (as defined in the Requirement/Test Case Field configuration for the Suite) for the Field or an error is reported. For example, for Requirements/Test Cases which contain values of 1.0 and 2.0 for product versions, to add 3.0 to these selections first add 3.0 to the Requirement/Test Case Field configuration for the versions field. Then, search for “2.0” and replace it with “2.0,3.0”, omitting the quotation marks, in this Field.

When user information is stored for Fields it is represented as the user account name (though it is displayed as the user’s full name). Thus, when replacing user information in such Fields account names need to be used.

Only a single value may be specified for a single select menu field. Additional values are silently discarded.

Where menu values contain a space change it to an underscore (“_”) when using the value as a search or replacement string. E.g. Face_Book, not Face Book.

The replace feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

3.3.2 Upload a File

To copy a local file into the current Folder click the  icon. The Upload File window is displayed.

Enter the name of the file to upload. Click **Browse** to select a file by looking through the available files.

Click **Upload file** to copy the file to the current Folder. The file name is displayed in the right hand frame of the tree and may be linked to from Requirements/Test Cases.

3.3.3 Import Requirements/Tests

To import Test Cases into the current Folder click the  icon. To import Requirements into the current Folder click the  icon.

Requirements/Test Cases can be imported into ApTest Manager from a file in Comma Separated Value format. CSV files can be created with spreadsheets such as Microsoft Excel and databases such as Microsoft Access. Programs that transform test information from another program or file format into a CSV file may also be employed. The Import Tests screen provides extensive documentation of the instructions and requirements for importing.

A CSV file must have one record per Requirement/Test Case to be imported. A record is usually one line, though it may spread across several lines in some cases. There can be as many Requirements/Test Cases in the file as desired.

For each Requirements/Test Case the file specifies the information to be imported as fields separated by commas. The same fields must be specified for each record in the file. The first line of the file provides labels for each of the fields.

For example:

ID,objective,atm_owner,priority,testcycle

reports/clone_test_case,A user can clone an existing test case,liu,High,"Integration, System"

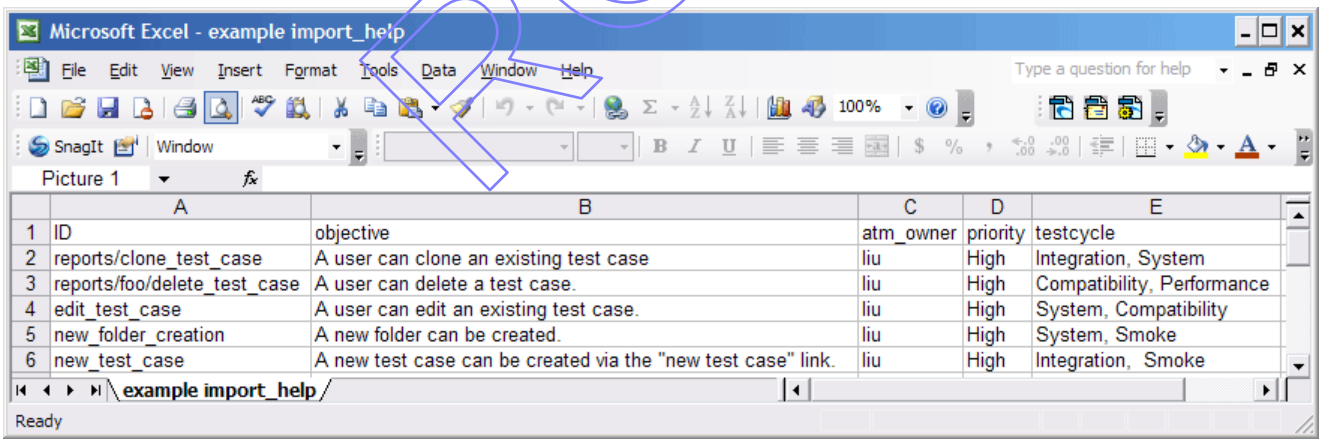
reports/foo/delete_test_case,A user can delete a test case.,liu,High,"Compatibility, Performance"

edit_test_case,A user can edit an existing test case.,liu,High,"System, Compatibility"

new_folder_creation,A new folder can be created.,liu,High,"System, Smoke"

new_test_case,"A new test case can be created via the ""new test case"" link.",liu,High,"Integration, Smoke"

Each of these records corresponds to a spreadsheet row and each field to a column. So, to produce the example above create a spreadsheet that looks like the following and save it as a CSV file.



	A	B	C	D	E
1	ID	objective	atm_owner	priority	testcycle
2	reports/clone_test_case	A user can clone an existing test case	liu	High	Integration, System
3	reports/foo/delete_test_case	A user can delete a test case.	liu	High	Compatibility, Performance
4	edit_test_case	A user can edit an existing test case.	liu	High	System, Compatibility
5	new_folder_creation	A new folder can be created.	liu	High	System, Smoke
6	new_test_case	A new test case can be created via the "new test case" link.	liu	High	Integration, Smoke

Figure 13 - Sample Excel File for Import

When importing data for a Requirement/Test Case that already exists, 3 options are available:

- Leave the Requirement/Test Case as it is and not import the new data.
- Remove the existing Requirements/Test Case and import the new data.

- Update the existing Requirement/Test Case, replacing only the values of those fields which are imported. Optionally, revision history table data that is imported may be prepended to the existing history table.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

3.3.4 Reorder Requirements/Tests

By default ApTest Manager orders Folders in alphabetical order and Requirements/Test Cases in numeric or alphabetical order.

Click the  icon to change the order of the Requirements/Test Cases and sub-Folders in the current Folder. To establish an order:

- The position of individual Requirement/Test Cases and sub-Folders in the current Folder can be moved up or down
- Items can also be ordered by the content of a Field by clicking the header of a table column; clicking the header a second time reverses the order

Click Save Arrangement to set the arrangement when it is complete.

Once saved an order persists and applies to all users of the Test Suite. It also applies to newly created Test Sets and to Test Sessions created from them. The order of Test Cases in existing Test Sets and Test Sessions created from them previously and in the future is not affected.

When new items are inserted into a Folder (by rename, copy or add operations):

- If an order is not specified for Requirements/Test Cases, new Requirements/Test Cases are inserted in alphabetical or numeric order.
- If an order is specified for Requirements/Test Cases, new Requirements/Test Cases are inserted below the ordered Requirements/Test Cases, in alphabetical or numeric order.
- If an order is not specified for the sub-Folders in a Folder, new sub-Folders are added to the Folder in alphabetical order.
- If an order is specified for the sub-Folders in a Folder, new Folders are inserted below the ordered Folders, in alphabetical order.

To clear ordering for a Folder and/or its sub-Folders use Manage Folder (see Section 3.8.2).

- If an order is set for Requirements/Test Cases a Clear test order in this folder check box is provided. Otherwise a message is shown indicating no Requirement/Test Case order is set.
- A check box to Clear test order within subfolders is provided.

- If an order is set for Folders a Clear folder order in this folder check box is provided. Otherwise a message is shown indicated no Folder order is set.
- A check box to Clear Folder within subfolders is provided.

3.3.5 Trash Can

When Requirements/Test Cases are deleted they are not removed, but rather are moved automatically into special Trash Folders where Requirements can continue to be referenced by Test Cases and Test Cases can continue to be referenced by Test Sets and Sessions.

If it is not empty the Trash Folder is shown just below the name of the Test Suite in a tree. The contents of a Trash Folder can be viewed, the Folder can be emptied, and Requirements and Test Cases can be returned to other Folders in the tree from the Trash by moving/renaming them.

When a Trash Folder is emptied its contents are moved to a Folder that is time stamped to indicate when the trash was taken out, under an invisible Folder named .Deleted_Files. In this scenario, while they have been removed from the tree, Requirements continue to be referenced from Test Cases and Test Cases can continue to be referenced from Test Sets and Test Sessions.

Uploaded files that are deleted are moved into the appropriate Trash Folder, where they can be moved back into the tree if desired. Existing references from Requirements/Test Cases to a file in the Trash still point the file in its location before it was deleted, and hence no longer work.

3.4 Create a New Folder

To create a Folder within the current Folder click the  icon. The New Folder window is displayed.

Enter a Folder name that is unique within the current Folder into the field `Folder Name`.

ApTest Manager limits Folder names to the characters available in the "POSIX Portable Filename Character Set". Basically, this means Folder names must be composed of A-Z, a-z, 0-9, periods ("."), underscores ("_"), and hyphens ("-"). ApTest Manager transforms space characters into "_" and removes other characters outside of this set. This is to ensure that Folders are representable in the file system on the server, and that they are portable to other servers should they need to be migrated later.

ApTest Manager may preface Folder names with a numeric value if Auto outline numbering is configured (see the following section).

Continue by entering an appropriate description of the Folder into the field `Folder Description`.

When satisfied that the name and description are accurate, click **Make Folder** beneath the description field. .

If a duplicate Folder Name is encountered, an error message is displayed above the Folder name asking for a different name. Type over the previous entry with an appropriate alternative.

By default Folder names are limited to 50 characters, though this limit can be increased or decreased during installation. By default Folders are shown in alphabetical order, though the user may specify a different Folder order (see Section 3.3.4).

3.5 Naming and Numbering Requirements and Test Cases

Each Requirement and Test Case has a name that is used to identify it, in the Requirements/Test Case tree, test execution, reports. etc. A name can be a number, a string, or a combination of the two. The type of names used in a Test Suite depends on its configuration.

A name can be made up of one or more parts.

- An ID. Every Requirement and Test Case has an ID. The ID may a numeric value assigned by ApTest Manager or a text string entered by the user. The style of ID style is configured separately for Requirements and Test Cases in a Test Suite. Four ID styles are provided: a text style and 3 numeric styles.

  1. Plain - The ID is a string specified by the user when the Requirement/Test Case is created (it may be renamed later). The ID must be unique within a Folder.

  2. Auto number by suite - The ID is a number automatically assigned by ApTest Manager. The number is incremented when a Requirement/Test Case is created in the Suite, starting at 1. For instance Test Case 133 is the 133rd Test Case in a Test Suite.

  3. Auto number by folder - The ID is a number automatically assigned by ApTest Manager. A separate number is maintained for each Folder – the number is incremented when a Requirement/Test Case is created in the Folder, starting at 1. For instance Test Case 133 is the 133rd Requirement/Test Case in a Folder.

  4. Auto outline number - The ID is a number dynamically assigned automatically by ApTest Manager. For instance ID 1.3.0.3 is displayed for the third Requirement/Test Case in the first sub-Folder in a Test Suite, contained in its third sub-Folder. A number is also assigned to each Folder in an outline numbered tree. Outline numbers are based on the location of the Requirement/Test Case and the Folder containing it. Changing the order of Folders and Requirements/Test Cases thus results in new outline numbering for them.

  By default the plain style causes Requirements/Test Cases within a folder to be put in alphabetical order. A numeric style causes the default order for Requirements/Test Cases within a folder to be numeric. Requirements and Test Case can be reordered by the user (see Section 3.3.4).

  The ID style configuration can be changed at any time. Existing IDs are not changed but IDs for newly created Requirements/Test Cases have the newly selected style. The *ApTest Manager Admin Guide* describes ID style configuration. To convert an existing Suite's Test Cases to a numeric ID style see the *ApTest Manager Admin Guide*.

- Optionally, other Fields for the Requirement/Test Case may be configured with the 'Name part' flag, meaning the value the user enters for them is added to the ID to form the Requirement/Test Case name.

  For example, if a Name part Field called summary is configured for Requirements and auto numbering by suite is configured for the Requirement ID style, a requirement would have a name that was its auto-assigned number followed by the value of its summary field, e.g. "57 Invoice number must support 3 digits". Name part Fields are marked with a * (green asterisk) when editing a Requirement/Test Case.

Figure 5 shows a Test Case tree with names using an ID style of plain. Figure 12 shows a Requirements tree with names using an ID style of Auto number by Suite and a Name part Field. Figure 14 shows a Requirements tree with Auto outline numbered ID style and a Name part Field.

ID and name part Field values in names are combined in the order the Fields are defined in the Test Case Field editor and are separated by spaces.

Auto numbered IDs assigned by ApTest Manager can be recalculated if desired, to accommodate user reordering or newly added Requirements or Test Cases for example. See the *ApTest Manager Admin Guide* for details.

In many areas of ApTest Manager the ID is prefaced by the folders which contain the Requirement/Test Case, e.g. Billing/Data Entry/56 Invoice Entry, identifying a Test Case contained within the Data entry Sub Folder in a Billing Folder that is the 56th Test Case and deals with testing the entry of invoices.

In specifying strings for names consideration should be given to naming conventions that avoid making Test Suites difficult to navigate. Very long names can be cumbersome for instance. Lengthy Folder names are generally not necessary, as the user-defined description for the current Folder is displayed at the top of the right-hand frame.

ApTest Manager limits plain style ID text strings and File and Folder names to the characters available in the "POSIX Portable Filename Character Set". This means they must be composed of A-Z, a-z, 0-9, periods ("."), underscores ("_"), and hyphens ("-"). ApTest Manager transforms space characters into "_" and removes other characters outside of this set. This is to ensure that IDs are representable in the file system on the server, and that they are portable to other servers should they need to be migrated later. Leading periods are not allowed.

Uploaded files cannot be automatically numbered by ApTest Manager.

Whether Folder, Test Case and Requirement names are case sensitive depends on whether file names in the underlying OS on the server are case sensitive.

By default the length of ID strings is limited to 50 characters, though this limit can be increased or decreased during installation.

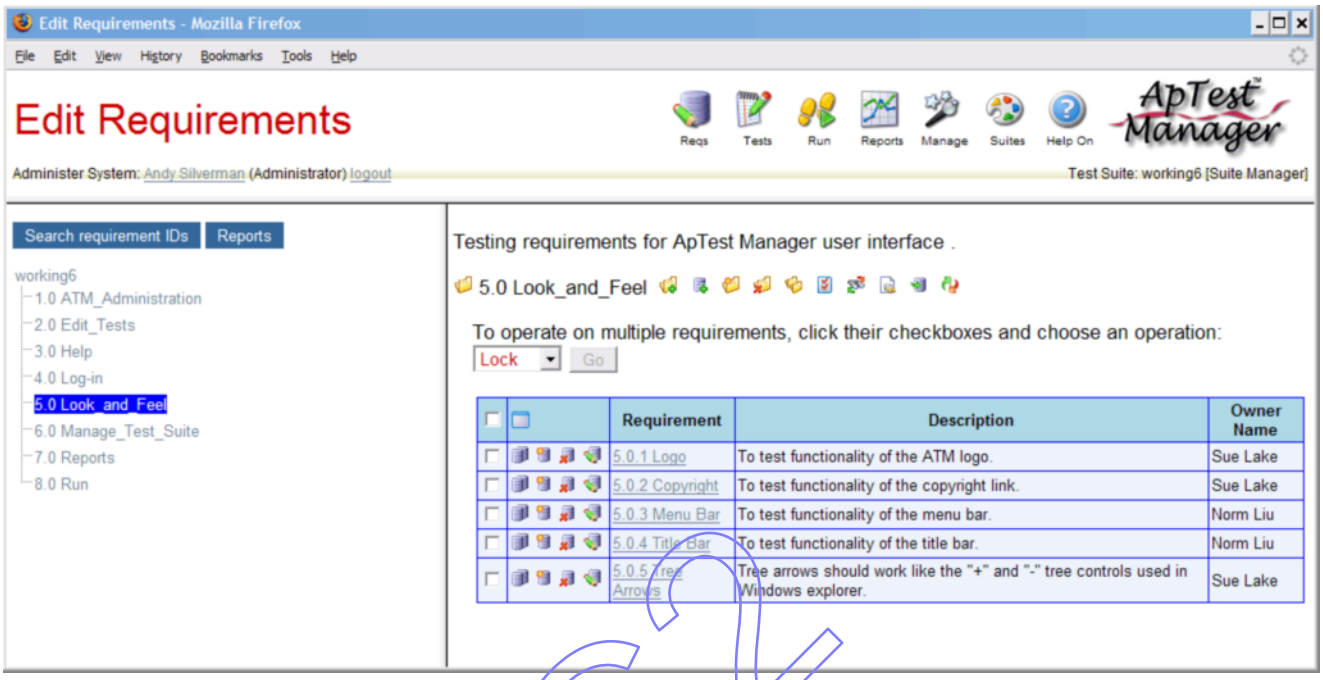


Figure 14 - Requirements tree with Auto outline numbering

3.6 Create a Requirement/Test Case

To create a new Requirement/Test Case within the current Folder click the  or  icon.

If a numeric ID style is configured the Requirement or Test Case is assigned an ID automatically and the user is taken directly to the Edit Test Case or Edit Requirement screen, described below, to begin entering the information for the newly created Requirement/Test Case.

If a plain ID style is configured, the Create Test Case or Create Requirement screen is displayed so the user can supply the ID.

Enter a unique Requirement/Test Case ID into the field `Test Case ID` or `Requirement ID` and click **Create and edit Test Case** or **Create and edit Requirement** to create the Requirement/Test Case.

ApTest Manager limits ID strings to the characters available in the "POSIX Portable Filename Character Set". This means ID strings must be composed of A-Z, a-z, 0-9, periods ("."), underscores ("_"), and hyphens ("-"). ApTest Manager transforms space characters into "_" and removes other characters outside of this set. This is to ensure that IDs are representable in the file system on the server, and that they are portable to other servers should they need to be migrated later. Leading periods are not allowed.

By default the length of ID strings is limited to 50 characters, though this limit can be increased or decreased during installation.

If a duplicate Requirement/Test Case ID is entered an error message that the ID has been defined previously is displayed. Change the ID to an appropriate alternative.

Once an ID is defined the user is taken to the Edit Test Case or Edit Requirement screen, described below, to begin entering the information for the newly created Requirement/Test Case.

3.7 Edit a Requirement/Test Case

To edit a Requirement/Test Case click the  or  icon - the Edit Test Case or Edit Requirement screen is displayed.

The contents of these screens are defined by templates that contain fields of information that make up the Requirement/Test Case. The fields displayed are determined by the Test Suite's configuration – the Profile selected when it was created and any additional customization performed later. See the *ApTest Manager Admin Guide* for information about Test Suite configuration.

The Requirement/Test Case Fields and their values for this particular Requirement/Test Case are displayed so the values can be modified. Figure 15 shows the Edit Requirement screen with an example set of Requirements Fields.

Click **Save Changes** to save the information when finished making edits.

3.7.1 Concurrent Edits

Due to the stateless nature of the WWW ApTest Manager cannot employ exclusive write locks. However if user A starts to make edits to a Requirement/Test Case and user B makes and saves edits to the same Requirement/Test Case in the interim, when user A goes to save he will be told the Requirement/Test Case has been changed and given the option of saving his changes, and thus overwriting user B's, or discarding them. User A could also look at user B's changes and merge them into his before saving if he wanted.

3.7.2 Requirement/Test Case Fields

Fields in a Requirement/Test Case can be:

- Text Fields to enter text information.
- Single selection menus to pick a value from a list of values.

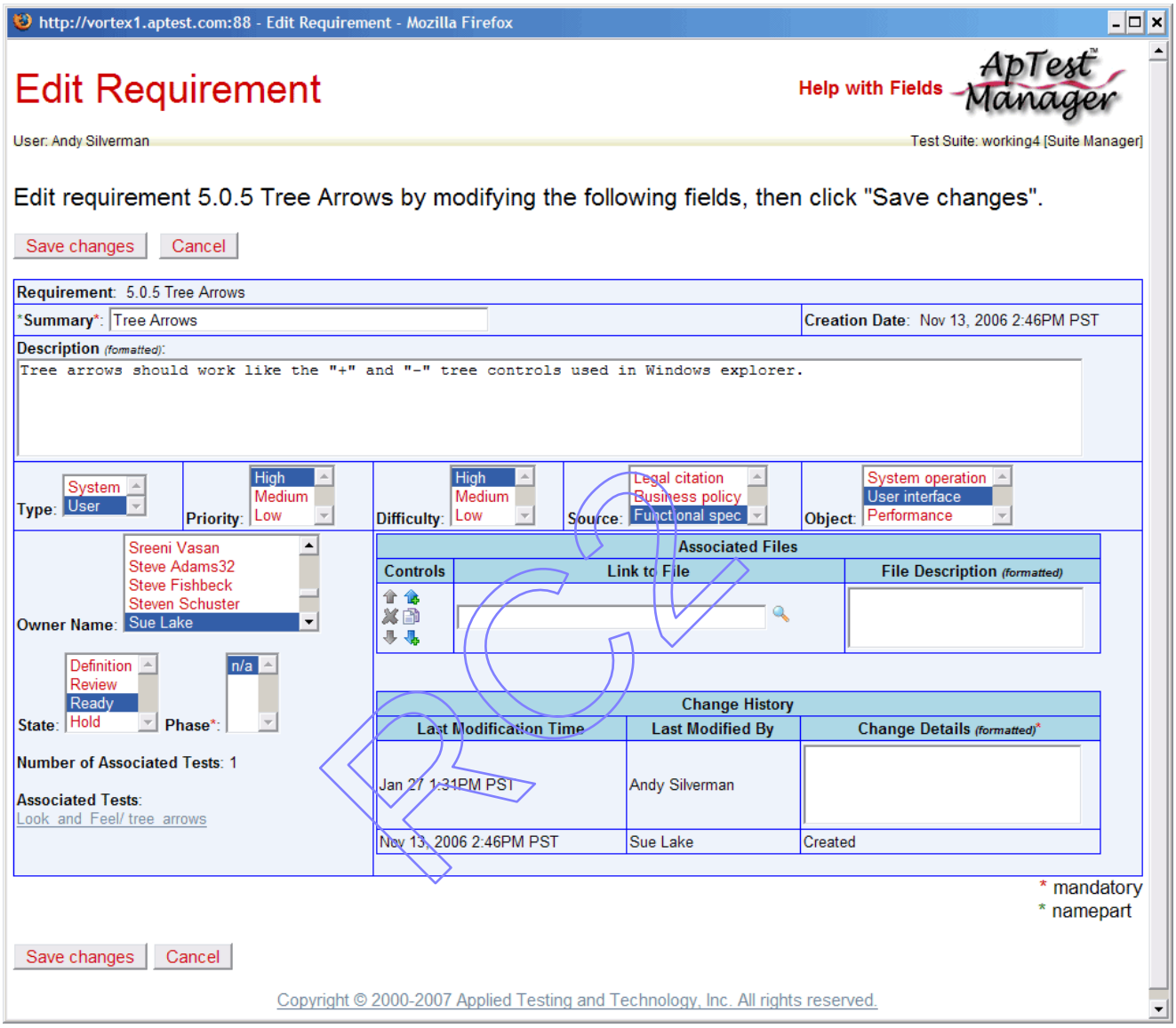


Figure 15 - Edit Requirement screen

- Multi-Selection menus to pick one or more values from a list of values. The keystrokes required to do this vary from browser to browser; consult the browser's documentation. Often the Shift and Control keys can be used to select different values and ranges of values.
- Tables composed of several other Fields.
- Special Fields such as the Requirement/Test Case ID, Creation Date, Author, Modification Date, and Modifying User which are filled in by ApTest Manager.

- Time tracking Fields to enter the time it is expected to take to execute this test, in minutes. Time Tracking is an optional item that may be configured for each Test Suite (Test Case only).
- File Fields to enter file names and have them turned into links. Files can be selected by browsing a list of previously uploaded files for this Test Suite.
- Date Fields to select a date from a calendar.
- User list Fields to pick users from a list of available users (e.g. to specify the user(s) assigned to write the Requirement/Test Case).
- A Requirements Link Field from which to select the Requirements fulfilled by a Test Case (Test Case only).
- An Associated Tests Field listing the Test Cases linked to a Requirement (Requirement Only).
- A modification history table to track changes to a Requirement/Test Case.

Fields that have the Name part attribute are marked with a * (green asterisk). Fields that have a mandatory attribute are marked with a * (red asterisk) and must have a value entered in order to be able to save the Requirement/Test Case.

Menu Fields may have the 'Depends On' flag set in which case their values depend on the value(s) selected in another menu field (single or multi-select). For instance, there can be a Feature menu that has a Sub-Feature menu depending on it. The values displayed for the Sub-Feature menu would vary based on the value(s) selected from the Feature menu.

3.7.3 Linking Test Cases to Requirements

If a Field of type atm_reqlink is included in the template for editing a Test Case for a Suite a  icon is displayed for browsing Requirements. Clicking this icon displays a pop-up window containing a tree of the Requirements defined for the Test Suite. One or more Requirements may be selected from this window. The selected Requirements are linked to the Test Case, for example the Test Case will be shown in a Requirements Traceability report as implementing each of the Requirements.

To unlink a Requirement from a Test Case deselect the Requirement in the pop-up window.

3.7.4 Text Fields

ApTest Manager offers four styles of textarea Fields. A textarea Field's style is shown in parentheses after the name the Field in the Edit Requirement/Test Case screen.

These styles format the information in different ways when the Field is viewed, executed, or shown in a report.

The primary differences between styles have to do with how data is entered: as if using a word processor, a typewriter, or as HTML source code.

Non-HTML styles allow text to be entered much like working on a typewriter or a word processor. Entering HTML allows control of text formatting with HTML commands. However some common text formatting, such as hitting Enter to create a blank line, does not work with HTML.

After editing a Requirement/Test Case it can be viewed (by clicking its name on the Edit Requirements/Tests screens) to ensure the information entered is formatted as desired.

Supported textarea Field styles and the way their contents are formatted follows. Some additional deprecated styles are supported for backward compatibility with earlier versions, but are not shown here.

code

Special characters are automatically transformed into HTML so they display correctly in a browser (e.g. '<' is transformed into "<"). Otherwise, the text entered is displayed as is.

Text is displayed in a monospace font. This style is used primarily for entering source code or (human readable) data into a Field.

formatted

This style allows typing text much as with a typewriter. Plus, numbered lists can be automatically created.

- Newlines (e.g. hitting Enter) can be used to end lines and paragraphs.
- Spaces or tabs can be used at the start of a line to indent text.
- Special characters are automatically transformed into HTML so they display correctly in a browser (e.g. '<' is transformed into "<").
- Lines within the Field that begin with "#. " (the pound sign followed by a period and a space) are automatically numbered when the Test Case is viewed or executed. This is a convenient mechanism for making a Test Case easy to understand and maintain. Lines beginning with "nnn. " (a number followed by a period and a space) are included in the numbered list, with the specified number.

HTML

Contents are expected to include HTML. Special characters need to be specified in HTML and all formatting specified with HTML directives. For example, newlines do not have any effect, the HTML
 or <P> directives need to be used instead or lines run together when the Field is displayed.

Knowledge of HTML is required in order to use this style of Field. Please refer to http://www.w3c.org/TR/html4/ for assistance with HTML.

wysiwyg

A What You See Is What You Get (WYSIWYG) editor provides a Word Processor style interface for formatting information. Paragraph formats, font styles, and sizes may be specified for selected text. Various other formatting functions are also offered.

	Check spelling (Internet Explorer only)
	Sets the foreground color.
	Sets the background color.
	Bold text style.
	Italic text style.
	Underline text style.
	Strikethrough text style.
	Makes the selection a subscript.
	Makes the selection a superscript.
	Align left.
	Align center.
	Align right.
	Align full.
	Inserts a new horizontal ruler
	Unordered list/bullet list.
	Ordered list/numbered list
	Outdent/decrease indentation.
	Indent/increase indentation.
	Undo the last operation.
	Redo the last operation.

	Cleanup code/Removes unwanted formatting. This function is useful when copying contents from for example an Office product.
	Insert a new link. Select text to be used as the label for the link before selecting this function.
	Unlinks the current selection/removes all selected links.
	Inserts an image.
Ω	Inserts a special character.
HTML	Opens HTML source code editor.

3.7.5 Table Fields

A table Field is composed of one or more rows consisting of one or more other Fields.

Tables are implemented within the browser so rows can be added and deleted very quickly. Tables are useful when sets of multiple Fields are needed in different quantities in different Test Cases. For examples, descriptions of associated files, test procedure steps, etc.

In each Requirement/Test Case a table may have a different number of rows and rows may be added or deleted on the fly. Fields in a table may be of any type.

Each table row also contains controls for that row:

- moves the row up one row
- moves the row down one row
- deletes the row (if there is only one row it cannot be deleted)
- creates a duplicate of the row
- inserts a new row above
- inserts a new row below

Note that tables on screens such as Edit Tests and Edit Requirements cannot be sorted based on table fields.

3.7.6 Inserting File References

File references can be included in Fields. These may be references to files uploaded into the Requirement/Test Case tree or other files on the same server as ApTest Manager or on other servers on the WWW. These references are turned into clickable links.

Links are clickable when a Requirement/Test Case is viewed and when a Test Case is run, so a user can view the information in associated files. Note that if Folders are included in the file name they must have the suffix .dir added to them, e.g. ~/TestFiles.dir/file.doc.

Links may be inserted to any type of object the browser knows how to display: web pages, images, documents, spreadsheets, etc. This allows information such as product documentation, screen shots, test data, etc. to be associated with Requirements/Test Cases.

As well as files, links can refer to programs such as CGI scripts a Web server can run to dynamically generate information, access databases, etc.

In Fields of type file the names of uploaded files may be entered automatically be selected by clicking the  icon for the field to browse a list of files that have been uploaded to this Test Suite. For Requirements any uploaded files in the Requirements tree can be selected and for Test Cases those in the Test Case tree.

As well file names may be typed in, separated by commas. These are turned into links:

- Simple file names (e.g. file.doc) are made into a link to the file relative to the folder of the current Requirement/Test Case.
- File names starting with ~/ (e.g. ~/file.doc) are made into a link to the file relative to the root directory of the current Test Suite.
- File names starting with a / (e.g. /file.doc) are made into a link to the file relative to the document root directory of the WWW server.
- Full URLs (e.g. http://www.aptest.com) are turned into links to the URL.

In html style textarea Fields include the HTML markup for a file reference (e.g. Click to access file) to create a link to a file. Files may be located on the same server as ApTest Manager or any other system with a WWW server.

In wysiwyg style textarea Fields create a link to a file by entering a URL to be associated with a previously entered text string using the insert/edit link icon of the wysiwyg editor.

In formatted style textarea Fields, file references are automatically turned into links. For example entering http://www.aptest.com/file inserts a link to that file into the Field. Files may be located on the same server as ApTest Manager or any other system with a WWW server.

3.7.7 Inserting Images

Images can be included directly inline into Requirements/Test Cases.

- In wysiwyg style textarea Fields click the Insert/edit image icon  and enter the URL of the image file to insert.
- In html style textarea Fields enter an HTML IMG directive referencing an image on the server or on other servers on the WWW. This causes the image to be displayed as part of the Requirement/Test Case. For example:

  <img border="0" src="http://www.foo.com/images/image.jpg" >

The reference to the image must be either a fully qualified URL (e.g. src="http://foo.com/images/image.jpg") or a server root relative reference to an image on the local system (e.g. src="/images/image.jpg").

3.7.8 Inserting Session Variable References

For Test Cases only. A Session Variable reference can be inserted into a Test Case Field when editing the Test Case. When the Test Case is executed or included in a report for a Test Session the Variable is expanded into its value for that Session.

Session Variables are not expanded in reports for a Test Suite (from the Edit Test screen) or when viewing or editing a Test Case. A Session Variable reference has the form <% variable_name %>. Variable names are case insensitive.

There are some predefined Session Variables that can also be referenced:

VARIABLE	VALUE
ATM_FULLNAME	the current user's full name
ATM_SESSDESC	the Session description
ATM_SESSNAME	the Session name
ATM_SESSNUM	the Session number
ATM_SETNAME	the Set name
ATM_USERNAME	the current user's account name

In a textarea Field of style wysiwyg insert a Session Variable by selecting it from the editor's "Session Variables" pull down menu.

3.8 Manage Requirements/Test Cases, Folders, and Files

3.8.1 Locking

Folders, Requirements/Test Cases, and files in a tree can be locked and unlocked. Locked elements of the tree cannot be modified, deleted, or renamed. They can only be copied or unlocked. This is useful to prevent modification of all or part of a tree that is not actively under development.

- To lock a Requirement/Test Case either lock the Folder in which it is contained or use the Lock bulk operation. A lock icon is shown for locked Requirement/Test Cases and the only operations available for locked entries are Copy and Unlock.

  To unlock a Requirement/Test Case either unlock the Folder in which it is contained or use the Unlock bulk operation.

- To lock a Folder, click its  icon, check the Lock this folder check box and click **Make Changes**. This locks the folder and all the files and Requirements/Test Cases contained in it. If the Folder contains Subfolders a Lock subfolders checkbox is displayed. Check this box to also lock all the Subfolders and their contents.

  In place of the Folder icon, locked Folders have an icon showing a folder with a lock. The only operations available for a locked Folder are Copy and Manage Folder.

  To unlock a locked Folder, click its  icon, uncheck the Lock this folder check box and click **Make Changes**. This unlocks the folder and all the files and Requirements/Test Cases contained in it. If the Folder contains Subfolders an Unlock subfolders checkbox is displayed. Check this box to also unlock all the Subfolders and their contents.

- To lock a file, lock the Folder in which it is contained. A lock icon is shown for locked files and the only operation available for a locked file is Copy.

  To unlock a file, unlock the Folder in which it is contained.

The Lock/Unlock operations may be restricted to users with administrative privilege through the Manage System Configuration screen.

3.8.2 Manage a Folder

To revise the description of the current Folder, manage its locked/unlocked state (see Section 3.8.1) and clear ordering set for its contents (see Section 3.3.4) click the  icon. The Manage Folder window is displayed.

Once changes have been entered, click **Make Changes**.

3.8.3 Copy a Folder

To copy the current Folder elsewhere in the Test Case tree click the  icon. The Copy Folder window is displayed.

Pick a Folder into which the current Folder is to be copied. The `New folder` field is a pull-down list of all the folders in the current Test Suite. Select one of the folders from this list.

Enter a name for the newly created copy into the `New name` field.

Click **Copy Folder** to copy the Folder.

If a duplicate Folder Name is entered an error message is displayed. Type over the previous New name entry with an alternative that is unique.

3.8.4 Rename a Folder

To rename the current Folder, possibly also moving it elsewhere in the tree, click the  icon. The Rename Folder window is displayed.

The `New Folder` field is a drop-down list of all the folders in the current Test Suite. Pick a folder into which the current one is to be moved. If the location where the current folder already resides is selected, it is renamed but not moved.

Enter a new name for the current Folder into the `New name` field.

Click **Rename Folder** to rename the Folder.

If a duplicate Folder Name is entered an error message is displayed. Type over the previous entry with an alternative that is unique.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen. This feature is disabled if source control is enabled during installation and a command is not defined for the renameDir configuration option.

3.8.5 Delete a Folder

To delete the current Folder and its contents click the  icon. A new window is displayed asking for confirmation of deletion of the Folder.

Click **Delete Folder** to remove the Folder. The Folder and its contents are moved to the Trash Can for the tree that contains it as a result of this action.

Click **Cancel** to return without deleting the Folder.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen. This feature is disabled if source control is enabled during installation and a command is not defined for the removeDir configuration option.

3.8.6 Copy a Requirement/Test Case

To copy a Requirement/Test Case click its  or  icon. The Copy Requirement or Copy Test Case window is displayed.

This feature creates a new Requirement/Test Case with the same data as the original Requirement/Test Case, except:

When a Requirement is copied the resulting copy is not linked to any Test Cases.

If a revision history table is defined for the Test Suite's Requirements/Test Cases it is cleared in the copy and an entry is added that records the copy.

Copy Requirement/Test Case is useful when creating several similar Requirements/Test Cases.

The `Copy to Folder` field is a drop-down list of all the folders in the tree. Pick a folder into which the copy is to be created. Enter a new ID for the Requirement/Test Case into the `Copy to ID` field[1]. Click **Copy Requirement** or **Copy Test Case** to create the copy.

If a duplicate Requirement/Test Case name is entered an error message that the name has been defined previously is displayed. Change the name to an appropriate alternative.

[1] If the ID Field for the Requirement or Test Case being copied is numeric, the `Copy to Name` field is not present; the copy created has a new numeric ID created automatically.

This feature may be restricted to users with administrative privilege.

Note: Each Test Suite can have a unique Requirement and Test Case configuration. So, the Requirements/Test Cases from different suites could be completely incompatible. Thus, while an entire Test Suite can be copied to create a new Suite, Requirements or Test Cases may not be copied between Test Suites.

3.8.7 Rename/Move a Requirement/Test Case

To rename or move a Requirement/Test Case click its  or  icon. The Rename Requirement or Rename Test Case window is displayed.

The `New Folder` field is a drop-down list of all the folders in the tree. Pick a folder into which the Requirement/Test Case is to be moved. If the Folder where the Requirement/Test Case resides is selected, the Requirement/Test Case is renamed but not moved. Enter a new name for the

Requirement/Test Case into the `New ID` field[1]. Click **Rename Requirement** or **Rename Test Case** to rename the Requirement/Test Case.

If a duplicate Requirement/Test Case name is entered an error message that the name has been defined previously is displayed. Change the name to a unique alternative.

[1] If the ID style for the Requirements/Test Cases is numeric, the `New ID` field is not present. In this case Requirements/Test Cases can be moved to other Folders but cannot be renamed, as ID values are assigned automatically.

If a Requirement/Test Case is part of a user-defined order and is renamed within the same Folder, its location in the defined order remains the same.

If a revision history table is defined for the Test Suite's Requirements/Test Cases an entry is added recording the rename/move.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen. This feature is disabled if source control is enabled during installation and a command is not defined for the renameFile configuration option.

3.8.8 Delete a Requirement/Test Case

To delete a Requirement/Test Case click its  or  icon. A window is displayed asking for confirmation of the deletion of the Requirement/Test Case.

Click **Delete Requirement** or **Delete Test Case** to remove the Requirement/Test Case from the current Folder. The Requirement/Test Case is moved to the Trash Can for the tree that contains it as a result of this action.

Click **Cancel** to return without deleting the Requirement/Test Case.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen. This feature is disabled if source control is enabled during installation and a command is not defined for the removeFile configuration option

3.8.9 Bulk Requirement/Test Case Operations

A number of operations can be performed on multiple Requirements/Test Cases within the currently selected folder.

- Lock
- Unlock
- Copy

- Delete
- Move

To perform one of these bulk operations select the Requirements/Test Cases to be operated on by clicking their checkboxes, choose an operation, and click **Go**.

The Copy and Move operations automatically place entries in the revision history table fields for the Requirements/Test Cases, if defined for the Test Suite, recording the operation.

The Lock/Unlock, Delete, and Move operations may each be restricted to users with administrative privilege through the Manage System Configuration screen.

The Move operation is disabled if source control is enabled during installation and a command is not defined for the renameFile configuration option.

The Delete operation is disabled if source control is enabled during installation and a command is not defined for the removeFile configuration option

3.8.10 Copy a File

To copy a file click the  icon for the file. The Copy File window is displayed.

The `Copy to Folder` field is a drop-down list of all the folders in the tree. Pick a folder into which the copy is to be created. Enter a new name for the file into the `Copy to Name` field. Click **Copy File** to create the copy.

This feature creates a new file with the same data as an existing file.

If a duplicate name file is entered an error message that the name has been defined previously is displayed. Change the name to an appropriate alternative.

This feature may be restricted to users with administrative privilege.

3.8.11 Rename a File

To rename, and optionally move, a file click the  icon for the file. The Rename File window is displayed.

The `New Folder` field is a drop-down list of all the folders in the tree. Pick a folder into which the file is to be moved. If the location where the file already resides is selected, it is renamed but not moved. Enter a new name for the file into the `New name` field. Click **Rename File** to rename the file.

Links from Test Cases or Requirements to files that are renamed are not automatically changed to point to the renamed file. Attempts to subsequently reference renamed files with such links will perforce fail.

If a duplicate file name is entered an error message that the name has been defined previously is displayed. Change the name to a unique alternative.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen. This feature is disabled if source control is enabled during installation and a command is not defined for the renameFile configuration option.

3.8.12 Delete a File

To delete a file click the  icon for the file. A window is displayed asking for confirmation of the deletion of the file.

Click **Delete File** to remove the file from the current Folder. The file is moved to the Trash Can in the tree that contains it as a result of this action. Links from Test Cases or Requirements to files that are deleted are not automatically removed. Attempts to subsequently reference deleted files with such links will perforce fail.

Click **Cancel** to return without deleting the file.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen. This feature is disabled if source control is enabled during installation and a command is not defined for the removeFile configuration option.

Chapter 4

4 Running Tests

The previous chapter described defining Requirements and Test Cases with ApTest Manager. This chapter describes using ApTest Manager for manual test execution, and importing results from external test automation. Click the Run icon on the ApTest Manager Menu Bar to get to this area of ApTest Manager.

Depending on a user's access level for a Test Suite the user may only be able to run Test Sessions but not modify Test Sets or Sessions, or may not have access to this area of ApTest Manager at all.

4.1 Test Sessions and Test Sets

Test execution in ApTest Manager revolves around Test Sets and Test Sessions.

A Test Set is a subset of the Test Cases in a Test Suite, selected by a query based on characteristics of the tests. Any number of Test Sets can be created.

A Test Set may encompass an entire Test Case tree or a just a portion of the tests in the tree to address specific test objectives. For example a Test Set can be limited to tests from a specific folder, for a specific feature, for a type of testing, for a specific product version, etc. Queries are made against the Field values entered for the Test Cases in a Test Suite.

A Test Set can be run as many times as desired in different test environments by creating Test Sessions for it.

A Test Session captures the results from running the tests in a Test Set. They allow a Set of tests to be run multiple times, for compatibility testing in different test environments. Sessions are the element on which most ApTest Manager reports are generated. Reports can be generated for projects comprised of lots of Test Sessions, and results from different Sessions can be compared.

To execute tests:

1. Create a Test Set; this identifies a set of Test Cases to be run (see Section 4.7).
2. Create a Test Session; this is where test results are stored (see Section 4.8).
3. Execute the Test Session; this presents the Test Cases to the user so they can be performed and information entered into the Session about the results of execution (see Section 4.3).

A Project includes the results from one or more Sessions, which can be based on one or more Sets. Sets and Sessions can be defined at the inception of a project, laying out the project's structure. Sets and Sessions can also be added to the project at any time, in response to new requirements or the results of testing to date for example. Reports can be generated on all the Sessions in a project, or on a subset of them, such as the results for testing a particular feature or test environment.

For example a testing project for a web application might consist of:

- A Set of smoke tests to do an initial quick validation of a release; run several times using different Sessions to test with different OSs and browsers.
- A larger Set of integration tests to more broadly test the release after Smoke testing; run in a larger number of Sessions with more different OS/browser combinations.
- A Set of the tests for new features added in the release; run in more Sessions to do additional testing of these features.
- A Set of tests that did not have adequate coverage to date, created at the end of the project and run in additional Sessions to get additional results in additional test environments.

Reports can be created at any time during or after the project, on any of these Sessions to see the status of any part of the project, as well as on all the Sessions to see the status of the entire project.

4.1.1 Session Variables

Test Sessions have *Session Variable* values associated with them. Session Variables are used to specify characteristics of the test environment for a run of a set of tests. Examples of Session Variables are the hardware (disk controller, phone handset, etc.), software (OS, browser, database, etc.), and network (wireless, broadband, cellular, etc.) on which the Test Session is run. Session Variables may be configured to be menus or text fields.

Each Test Suite can have its own custom Session Variables and sets of values for Variable menus. Default Variable values may be defined for each Test Set and are inherited by its Test Sessions.

Session Variables inform the tester of the environment to be used for running the Test Cases in each Session. They can be used in defining reports, as described in Chapter 5, for instance to request a report on all the Sessions run on a particular OS or a particular hardware platform.

4.1.2 Test Execution Models

Over time, an organization builds up a repertoire tests for a product. A new project testing a new product release or configuration can build on the tests from prior projects. New tests can be added and existing tests declared obsolete for each project.

Test Sets and Sessions defined the project infrastructure, what groups of tests are to be run in which test environments and on what schedule. This structure can be copied and carried forward from project to project, also facilitating ongoing quality improvement.

As the results and notes of each test campaign are stored in different Sessions, the results of previous projects are available at any time. ApTest Manager can produce reports comparing the results of different Test Sessions in the current project for different test environments as well as regression comparisons of results from different projects.

Each Test Session may be worked on for some time; rerunning its Test Cases, all or in part, if desired. An audit trail of each time a Test Case is run in a Session is maintained.

4.2 Test Sessions

The Run Tests screen provides a table of Test Sessions.

Click a Test Session number to view information about the Session. Click one of the icons to the left of a Test Session number to work with the Session.

-  to run the Test Session (see Section 4.3).
-  to access the Test Session Summary (see Section 4.4).
-  to manage the Test Session (see Section 4.10).

What columns of information are contained in this table is configurable. To select the information to show for each Session in the table, click the  icon in the table header. The Configure Table screen allows a number of different columns to be included in the table. It is advisable for readability to just display a modest number of columns in this table.

An example Run Tests screen is shown in Figure 16.

4.2.1 Selecting Sessions

The table of Sessions on the Run Tests screen can display every Session for every project performed in a Test Suite. It can also be filtered to show just those Sessions in the current project or just the Sessions assigned to a particular user that are not yet complete for example.

Session selection controls located at the bottom of the screen control what Sessions are shown in the table. A Session must match at least one selected value in each selection control in order to be displayed.

Click **Filter Session Table** to get to these controls.

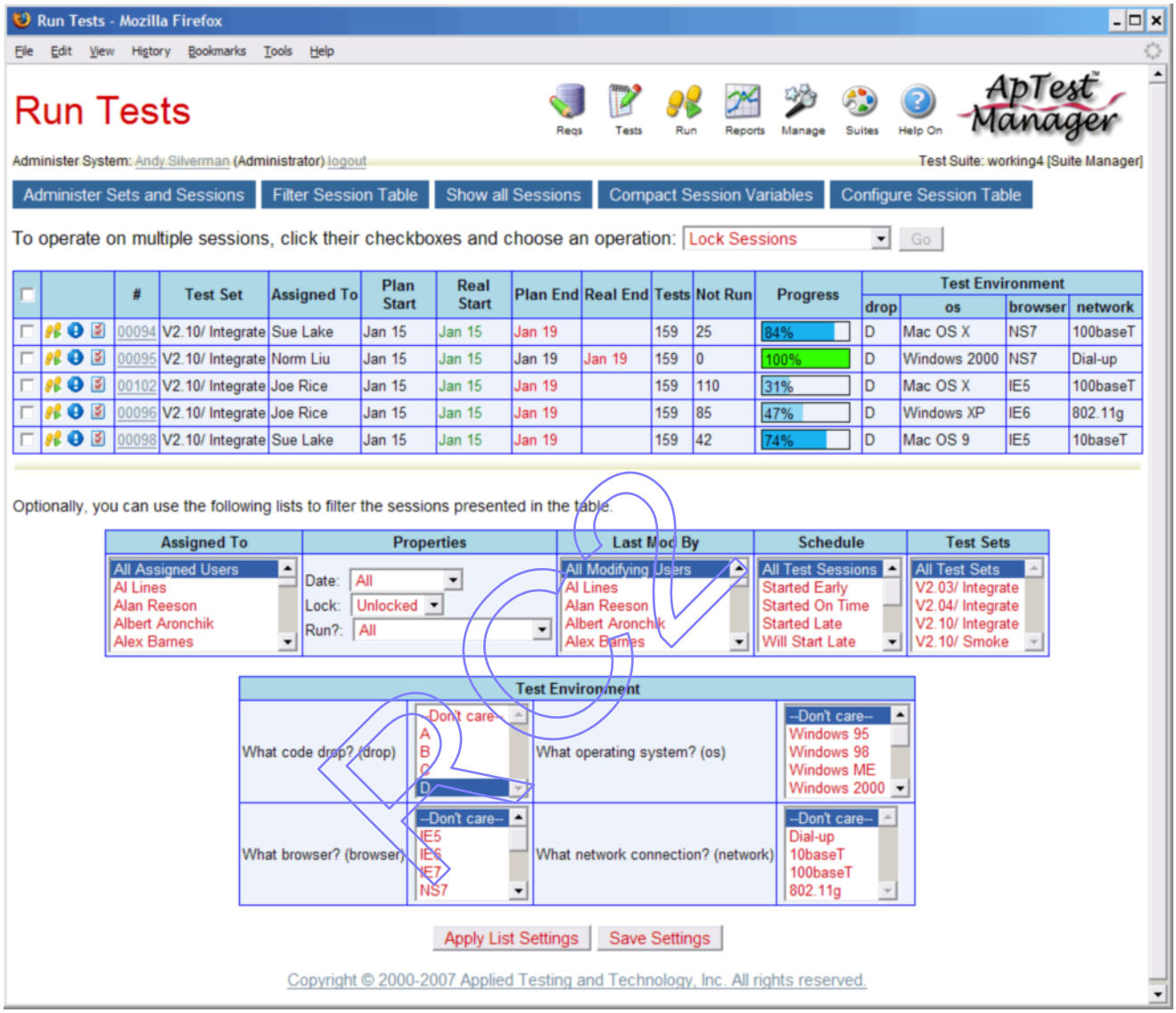


Figure 16 - Run Tests screen

Values of the Session Selection fields can be saved by clicking **Save Settings**. These values are applied when the Run Test screen is visited in the future, until different values are saved. Settings are saved on a per-user basis for each Test Suite. So each user can configure their own settings and have them applied each time they visit this screen.

- Test Sets – specify the Test Sets for which Test Sessions are shown.
- Dates – specify a time period during which the Test Sessions shown were executed.
- Users – specify the ApTest Manager users who ran the Test Sessions shown.

- Locked – specify only locked or unlocked Test Sessions. By convention Sessions are locked after their project is complete. This avoids accidental modification of the results of previous projects while keeping these results available for regression analysis. All Sessions that are unlocked are thus elements of the current project.
- Run – specify only completed, never run, or partially complete Test Sessions.
- Assigned users – specify only Test Sessions with Test Cases assigned to specific users are shown.
- Schedule – specify Test Sessions that started or ended early, on time, or late.
- Session Variables– a selection field is provided for each Session Variable that is marked as selectable. These fields present menus of values or fill in fields for text searches that specify which Test Sessions are shown based on their Variable values. Strings for text searches are case insensitive.

Click **Apply Selections** to make a temporary change to the Session selections; without saving the settings permanently.

The Test Sets, Users, Schedule and Session Variable controls for Session selection allow choosing multiple values from among those displayed. The keystrokes required to do this vary from browser to browser; consult the browser's documentation for details. Often the Shift and Control keys can be used to select specific values or ranges of values.

Clicking **Compact Session Variables** limits how much information is displayed for a Session Variable to the first 32 characters of the first Variable value. A Variable whose value is not fully displayed has a blue triangle appended to the information that is displayed. Placing the mouse over this blue triangle shows the entire value as a tool tip. Click **Expand Session Variables** to show the entire value of Session Variables.

Clicking **Show all Sessions** causes the table to show all a Suite's Test Sessions by clearing all the Session table selection controls.

4.2.2 Sorting Sessions

The way the table of Sessions is sorted can be changed by clicking on one of the titles of the columns in the table. The table is resorted based on the title clicked. Clicking that title again reverses the sort order. An up ( ) or down ( ) arrow is displayed next to the header for the column on which the table is currently sorted. The Description and Session Variable columns are not used for sorting.

4.2.3 Bulk Test Session Operations

A number of operations can be performed on multiple Test Sessions. To manage multiple Test Sessions click the check boxes for the Test Sessions, select an operation, and click **Go**.

- Lock - lock the Test Sessions so they cannot be modified.
- Unlock - unlock the Test Sessions.
- Copy - copy the Test Sessions, creating new Test Sessions.
- Delete - remove the Test Sessions.
- Move - move the Test Sets to another Folder.
- Refresh - update the Test Sessions from the Test Sets current in their Test Sets.
- Change Session Values - allows Session Variables to be updated for multiple Sessions, which can be useful when a Session Variable is used to track code drops and a new drop is received, Existing Test Sessions can be copied and reused to test a new drop, after updating the appropriate Session Variable to indicate the drop being tested.
- Clear Session Results - rest the results and run information for the Test Cases in the Sessions.
- Assign Sessions - assign all the tests in the Test Sessions to one or more users. Depending on the number of sessions selected and the number of users receiving email notification of assignment changes this operation can take some time to perform.

The Lock/Unlock, Delete, and Rename operations may each be restricted to users with administrative privilege through the Manage System Configuration screen.

4.2.4 Assigning Test Cases to Users

Individual Test Cases within a Test Session may be assigned to one or more users (see Section 4.10.8). Assignments may also be defined for a Test Set (see Section 4.9.5); these become the default assignments for subsequently created Test Sessions for that Set.

Test Case assignment tells testers the Test Cases in Test Sessions they are responsible for executing and allows managers to track what tasks each tester has accomplished and has remaining to complete.

- Through the Run Tests screen a user can elect to run only those Test Cases assigned to them in a Test Session. For some Test Suite access levels these are the only tests the user can run in the Session.
- The Select Report screen can be configured so just those Sessions with Test Cases assigned to specific users are shown.
- In the User's Report the number of assigned Test Cases for each user is shown by Test Session broken down by those that have been run and those that remain to be run.

- Most reports for Test Sessions can be configured so only those Test Cases assigned to specific users are included in the report.
- Which users have Test Cases assigned is shown for each Test Session on ApTest Manager reports, the Run Test screen, the View Test Session information screen, and the Select Report screen.

4.2.5 Test Session Scheduling

Planned start and end dates may be specified for individual Test Sessions, along with a window of time for each. The actual start and end of execution are automatically recorded by ApTest Manager.

If the actual start or end of Session execution occurs within the specified time window following the planned date it is considered to have occurred on time. It is considered early if it happens before the planned start/end date and late if it occurs after the end of the window.

Test Session scheduling allows users to track actual versus planned events in the progress of a test campaign.

- A Session's planned schedule can be specified at Session creation. It can be modified later through the Change name/schedule Session management operation and the Change Session Values bulk Session operation. A Default Session schedule may be defined for a Test Set; this is inherited by Test Sessions that are subsequently created for the Set.
- Users may receive email notifications of the actual start and end of Test Session execution that indicate if an event was early, late, or on-time.
- Tables on the Run Tests and Select Report screens can be configured to display planned and actual schedules and may be filtered by different schedule results. Actual dates indicate if they were early, on time or late by their colors, blue, green, and red respectively. An actual date is shown in black if there is not a corresponding planned date. Planned dates that are pending and have passed are also indicated in red.
- Schedule details are available by clicking the Session number in the Run Tests and Select Report tables of Sessions.
- Planned and actual schedules are shown in the header of each ApTest Manager report.
- The Schedule Report shows the planned and actual schedules for Test Sessions, along with expected events that are late, early or pending.

As with other dates, Test Session schedules dates are presented in the time zone and format configured for a user. If users in other time zones are executing Test Sessions, care should be taken in setting schedules to accommodate the working hours of these users.

Use of Session schedules is optional. They can be defined, displayed and reported on if desired. Alternately they can simply not be defined and the Run Tests and Select Report screens can be configured to not display them.

4.3 Running a Test Session

Click the **Run Session** icon  to the left of a Session in the table on the Run Tests screen to execute that Session. This involves presenting each of the tests in the Session so that it can be performed and a result and associated information entered.

Several options for how execution is to be performed are presented:

- One at a time or Many at a time: whether each Test Case should be presented on its own screen or a screen with multiple Test Cases should be shown.
- Which Test Cases are to be executed, based on their previous results in the Session. Test Cases with results of untested have not been run yet. Thus specifying untested causes the Test Cases in the Test Session that have not been run to be presented. Specifying other results reruns Test Cases that have been previously run with those results. This is useful for testing new drops by rerunning previously failed tests for example.
- If just those Test Cases assigned to the current user are to be executed, rather than all the Test Cases.
- Which Test Cases are to be executed based on the values of Test Case and Execution Fields and the Fields for associated Requirements. Note if the checkbox for running just tests assigned to the user is checked then selecting test to be run based on their Session assignment matches just those tests assigned to the user and to users selected from the Assigned To Execution Field.

For each Test Case shown, the used performs the test and provides a result for its execution. Notes about executing the test as well as information for any Execution Fields, such as Problem Reports that are created, may also be entered. Files, such as logs or screen shots may also be uploaded and associated with the execution of the Test Case in the Test Session. The order in which the Test Cases are presented is determined by how they have been arranged for the Test Session.

4.3.1 Running Test Cases One at a Time

When Test Cases are run one at a time they are each presented on a separate screen, shown in Figure 8. This screen is based on a template – the Fields displayed can be configured separately for each Test Suite.

Once a Test Case is performed and its result entered click **Send Result** to record the result and advance to the next Test Case in the Session. Click **Reset run info** to clear the contents of execution related fields. To not enter a result, click **Skip Test**. The result retains its previous setting and no entry in the Test Case's notes is made.

There is a link at the bottom of the page that enables editing the current Test Case if an error is noticed in the Test Case. This feature is available only to users with sufficient access.

4.3.2 Running Multiple Test Cases

When Test Cases are run many at a time several tests are presented on a common screen, shown in Figure 9, and results can be entered for one or many at once. The number of Test Cases presented per screen is determined by the user's pagination level setting. With the necessary permission this value can be changed by clicking on the Username on the Suite Bar. This screen is based on a template – the Fields displayed can be configured separately for each Test Suite.

The Run Multiple screen is usually configured to show less information about each Test Case than is provided when they are run one at a time. It may thus be desirable to run Test Cases One at a time initially and Many at a time when rerunning them. One at a time and Many at a time execution may be mixed at will however.

Once the Test Cases on a screen have been performed and their results entered, click **Save Changes** to record the results and advance to the next screen of Test Cases in the Session. Move around within the screens using the Go to page/Next/Previous controls. When done with running tests, click **Finish.** Click **Reset run info** to clear the contents of execution related fields for a test.

4.3.3 Entering Notes

A field in which notes about what was encountered in performing a test is usually configured to be displayed for each test.

File references entered into the notes field are automatically turned into links. For example entering http://www.aptest.com/file causes a link to that file to be inserted into the notes field.

ApTest Manager keeps track of each time the notes or result of a Test Case is changed and displays a history of this information in many of its reports and on the Run Test Case and Run Multiple Tests screens.

4.3.4 Creating Problem Reports

ApTest Manager can be configured to interface with a Problem Tracking system. If an installation has been configured to do this a link labeled "Submit a Bug Report" is provided when a Test Case is run. Clicking this link invokes the Problem Tracking system and Problem Reports can be submitted, with information prepopulated automatically by ApTest Manager.

4.3.5 Recording Problem Reports

The example configurations shipped with ApTest Manager include two Execution Fields: IDs for Problem Report and Problem Report links.

The Problem Report ID Field is a text Field in which references to problem reports can be entered. These are generally names or numbers that reference PRs in the Problem Tracking system.

The Problem Report links Field is intended to contain links to PRs in the Problem Tracking system. If the Problem Tracking system is WWW based the link to a Problem Report can be copied from the browser and pasted into this Field. When this Field is shown in reports ApTest Manager turns the pasted links into clickable links that invoke the Problem Tracking system. This allows user to invoke the Problem Tracking system to view and modify PRs and to check their status. As many links as desired may be entered into this Field, separated by spaces.

The Status and Results reports as shipped with ApTest Manager include Problem Report information.

4.3.6 Uploading Files

Click **Upload File** to upload a file and associate it with a Test Case's execution in the Test Session. For example a screen shot to illustrate a problem.

Enter the name of a local file to upload or click **Browse** to select the file by looking through the available files. Click **Upload file** to copy the file to the server.

Uploaded files are stored separately for each Test Case in the Test Session. Thus, files with the same name can be uploaded for different Test Cases.

A reference to the uploaded file is added to the notes Field for the Test Case, and a description of the file can be added by the user. The file reference is of the form atmResultFile:filename which is expanded by ApTest Manager to a link to the uploaded file when the notes Field is displayed in reports. Clicking that link displays the file.

4.4 Using the Session Summary

Click the **Session Summary** icon  to the left of a Session in the table in the Run Tests screen to view the results of the Session with the Session Summary screen. The Session Summary also allows, for Sessions which are not locked, modification of the results of Test Cases by running them individually or updating their execution notes. This screen provides a "cherry picker" style interface for running a Session and a quick summary of the status of execution, as a supplement to the other two execution modes.

For each Test Case in the Test Session the Session Summary provides:

- the current result for the Test Case
- a log of each time the Test Case was run in this Session showing
    - the user that ran the test

- the date and time it was run
- the Test Case result
- any information that the user entered

- the ability to run the Test Case, modify its execution notes, or submit a bug report

4.4.1 Running a Test Case

Click **Run this test** next to a Test Case in the Test Session Summary to run (or re-run) the Test Case using the Run one at a time screen.

Click **Run from here** next to a Test Case in the Test Session Summary to run (or re-run) the Test Case and any subsequent Test Cases with results that match the results specified last time Test Cases were run using the Run one at a time screen.

4.4.2 Editing the Note for a Test Case

Click **Edit Note** for a Test Case in the Test Session Summary to add to the information in the notes for this Test Case for this Session. This presents the last note entered and allow creating a new note by modifying or replacing this text.

See **Uploading Files** in the preceding section for a description of the Upload File button on the Edit Note screen.

4.4.3 Submitting a Bug Report

Click **Submit Bug** for a Test Case in the Test Session Summary to create a bug report in the Problem Tracking system for this Test Case for this Session.

4.4.4 Viewing a Test Case

Click the name of a Test Case in the Test Session Summary to view the information for the Test Case without rerunning it.

4.5 Test Sets

Test Sets are administered from the Test Sets screen (reached from the Run Tests screen by clicking **Administer Sets and Sessions**).

ApTest Manager organizes and displays Test Sets in a tree composed of Folders, similar to those used for Requirements and Test Cases (see Chapter 3 above). A tree is specific to a Test Suite – each Test Suite has its own tree that contains the Test Sets for that Suite. The tree displayed is that of the current Test Suite. Click on the  icon to work with a different Suite.

Any number of Test Sets and Folders can be placed at any level of the tree. Keeping the Test Set tree from being too deep or wide is desirable for readability and ease of use. It is also beneficial to keep Folder and Test Set names reasonably short, yet adequately descriptive. Additional Folders and Test Sets may be added whenever desired.

This mechanism is very flexible and may be used to structure Tests Sets in a wide variety of ways. A completely flat test structure can be employed in which all Test Sets in the Test Suite are placed in a single Folder. At the opposite extreme small groups of related Test Sets may be placed in separate Folders, which themselves may be grouped within other Folders based on characteristics such as the type of testing performed or the functional area tested. How to structure a Test Set tree is at the discretion of the process an organization wishes to use. A useful practice is to have all the Sets for a particular release in a single branch of the tree (a Folder and its sub-Folders). This allows the Sets to be copied and updated en mass when a project to test a new release is to begin.

4.5.1 Navigation

A Test Set tree is displayed and manipulated with a user interface employing two side-by-side frames. This interface is similar to the "Explorer" view native to the Windows platform.

Use the browser scroll bar, if shown, to scroll a frame upward or downward.

The left-hand frame shows the Folders that comprise the tree and allows individual Folders to be selected. The right-hand frame shows the Test Sets contained in the currently selected Folder, along with any sub-folders.

The name of the Test Suite appears as the top link of the tree in the left-hand frame. The right-hand frame is traditionally blank until a Folder selection is made.

The  icon precedes the name of the Folder currently displayed in the right-hand frame. This is followed by a series of icons for working with Folders. Below the Folder name is a table of the Test Set in the Folder followed by any sub-Folders it contains. The Test Set table can be sorted by different columns by clicking on a column name. Clicking the name again reverses the sort order.

Each row in the Test Set table contains information for an individual Test Set. Icons are provided for managing the Test Set and for creating new Test Sessions for it. The user must have an appropriate level of access in order for these icons to be shown.

The columns displayed in the Test Set table can be configured by clicking the icon in the table header. The Configure Table screen allows a number of different columns to be included in the table. It is advisable for readability to just display a modest number of columns in this table.

The Test Set name is always displayed in the table. When this name is shown in other parts of ApTest Manager the Folders that contain it are also shown: e.g. 3.0/Test Cycles/Integration.

The selected table configuration is also used when Set information is displayed in Set management operations.

4.5.2 Collapsing and Expanding the Tree

The level of detail in which the tree is shown can be collapsed and expanded.

Notice the '+' to the immediate left of some of the Folders in the tree. These are Folders which have further levels of Folders defined within them. Clicking a '+' causes the display of these sub-Folders. The '+' associated with a Folder is changed to '-' when the Folder contents are displayed. Clicking the '-' collapses that portion of the tree. This feature is especially beneficial when navigating through large multi-layer Test Set trees.

4.5.3 Naming Conventions

Folders and Test Sets can be named according to an organization's policy of choice.

Consideration should be given to naming conventions that avoid making Test Set trees difficult to navigate. Very long names can be cumbersome for instance as the left frame can become cluttered. Lengthy Folder names are generally not necessary, as the user-defined description for the current Folder is displayed at the top of the right-hand frame.

ApTest Manager automatically sorts the displayed Folders and Test Sets alphabetically.

4.6 Managing Test Set Trees

Test Set trees are populated and managed by selecting one of the icons in the right-hand frame for the current Folder or one of the Test Sets within that Folder. The Test Suite itself is the top level of the tree; Folders and Test Sets are added beneath it.

Click one of the icons to the right of the current Folder in the right-hand frame to manage the current Folder or add new Folders and Test Sets to it.

- Click  to create a Folder within the current Folder.
- Click  to create a new Test Set within the current Folder.
- Click  to rename the current Folder, possibly also moving it elsewhere in the Test Case tree.
- Click  to delete the current Folder.
- Click  to copy the current Folder elsewhere in the Test Set tree.
- Click  to revise the description of and lock/unlock the current Folder.
- Click  to view the Test Sets in the current branch of the tree (this Folder and any sub-Folders).
- Click  to modify settings for Test Sets in the current branch of the tree (this Folder and any sub-Folders).
- Click  to refresh Test Sets in the current branch of the tree (this Folder and any sub-Folders). Note Sets that are based on selections made in the Coverage Report not refreshed.

Click one of the icons to the left of a Test Set name in the right-hand frame to manage or create a new Test Session.

- Click  to manage the Test Set.
- Click  to create a new Test Session from the Test Set.

4.6.1 Bulk Test Set Operations

A number of operations can be performed on multiple Test Sets within the currently selected folder.

- Lock - lock the Test Sets so they cannot be modified.
- Unlock - unlock the Test Sets.
- Copy - copy the Test Sets to this or another Folder.
- Delete - remove the Test Sets.
- Move - move the Test Sets to another Folder.

- Refresh - reapply the Test Case Selectors for the Test Sets to the current Test Case repository. This updates the Test Set to include all currently matching Test Cases. This operation can also be performed for Folders (see Section 4.6.3), causing all the Test Sets in the Folder and any sub-folders to be refreshed. Note Sets that are based on selections made in the Coverage Report not refreshed.
- Show Details - show the Test Set table for just the selected Test Sets.
- Change Values - change the Test Case Selectors for the Test Sets. For example, when a new release is received existing Sets can be reused to test it by copying them and changing the value of the copies' Product Version selector. This operation can also be performed for Folders (see Section 4.6.3), causing all the selectors for all the Test Sets in the Folder and any sub-folders to be changed.

To perform one of these operations select the Test Sets to be operated on by clicking their checkboxes, choose an operation, and click **Go**.

The Lock/Unlock, Delete, and Rename operations may each be restricted to users with administrative privilege through the Manage System Configuration screen.

4.6.2 Locking the Test Set Tree

Folders and Test Sets can be locked and unlocked. Locked elements of the tree cannot be modified, deleted, or renamed. They can only be copied or unlocked. This is useful to prevent modification of all or part of a Test Set tree that is not actively under development.

- To lock a Folder, click the  icon, check the Locked check box and click **Make Changes**. This locks the folder and all the Test Sets contained in it. If the Include subfolders checkbox is checked all sub Folders and their contents are also locked.

  In place of the Folder icon, locked Folders have an icon showing a folder with a lock. The only operations available for a locked Folder are Copy and Manage Folder.

  To unlock a Folder, click the  icon, uncheck the Locked check box and click **Make Changes**. This unlocks the folder and all the Test Sets contained in it. If the Include subfolders checkbox is checked all sub Folders and their contents are also unlocked.

- To lock a Test Set either lock the Folder in which it is contained or use the Lock bulk operation for Test Sets. A lock icon is shown for locked Test Sets and the only operations available for a locked Test Sets are Copy and Unlock.

  To unlock a Test Set either unlock the Folder in which it is contained or use the Unlock bulk operation for Test Sets.

The Lock/Unlock operations may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.6.3 Create a New Folder

To create a Folder within the current Folder click the  icon. The New Folder window is displayed.

Enter a Folder name into the field `Folder Name`. ApTest Manager limits Folder names to the characters available in the "POSIX Portable Filename Character Set". Basically, this means Folder names must be composed of A-Z, a-z, 0-9, periods ("."), underscores ("_"), and hyphens ("-"). ApTest Manager transforms space characters into "_" and removes other characters outside of this set. This is to ensure that Folders are representable in the file system on the server, and that they are portable to other servers should they need to be migrated later. Leading periods are not allowed.

Continue by entering an appropriate description of the Folder into the field `Folder Description`.

When satisfied that the name and description are accurate, click **Make Folder** beneath the description field. .

If Folder Name is entered that already exists in the current Folder, an error message is displayed above the Folder name asking for a different name. Type over the previous entry with an appropriate alternative.

Folder names are limited to 50 characters, though this limit can be increased or decreased during installation.

4.6.4 Manage a Folder

To revise the description of the current Folder or manage its locked/unlocked state click (see Section 4.6.2) the  icon. The Manage Folder window is displayed.

Once changes have been entered, click **Make Changes** below the Folder description field.

4.6.5 Copy a Folder

To copy the current Folder elsewhere in the Test Set tree click the  icon. The Copy Folder window is displayed.

Pick a Folder into which the current Folder is to be copied. The `New folder` field is a pull-down list of all the folders in the tree. Select one of the folders from this list.

Enter a name for the newly created copy into the `New name` field.

Click **Copy Folder** to copy the Folder.

If a duplicate Folder Name is entered an error message is displayed. Type over the previous New name entry with an alternative that is unique.

4.6.6 Rename a Folder

To rename the current Folder, possibly also moving it elsewhere in the Test Set tree, click the  icon. The Rename Folder window is displayed.

The `New Folder` field is a drop-down list of all the folders in the tree. Pick a folder into which the current one is to be moved. If the location where the current folder already resides is selected, it is renamed but not moved.

Enter a new name for the current Folder into the `New name` field.

Click **Rename Folder** to rename the Folder.

If a duplicate Folder Name is entered an error message is displayed. Type over the previous entry with an alternative that is unique.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.6.7 Delete a Folder

To delete the current Folder and its contents click the  icon. A new window is displayed asking for confirmation of deletion of the Folder. Note that there is no trashcan for Test Set Folders – once deleted they cannot be undeleted.

Click **Delete Folder** to remove the Folder.

Click **Cancel** to return without deleting the Folder.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.7 Create a Test Set

From the Test Set screen, click the  icon for a Folder. Enter the name of the Test Set in the field provided and a brief description in the appropriate field.

ApTest Manager limits Test Set names to the characters available in the "POSIX Portable Filename Character Set". Basically, this means Folder names must be composed of A-Z, a-z, 0-9, periods("."), underscores ("_"), and hyphens ("-").ApTest Manager transforms space characters into "_" and removes other characters outside of this set. This is to ensure that Test Sets are representable in the file system on the server, and that they are portable to other servers should they need to be migrated

later. Leading periods are not allowed. Test Sets are displayed in alphabetical order it is advisable to establish an appropriate naming convention so Sets are shown in the order desired.

Test Set names are limited to 50 characters, though this limit can be cahnged during installation.

Whether Folder and Test Set names are case sensitive depends on whether file names in the underlying OS on the server are case sensitive.

The Test Cases contained in a Set are determined when it is created. New Test Cases that are created after the Set are not included in it automatically. However the Set can be refreshed so it contains new Test Cases meeting its criteria, as described in Refresh a Test Set (see Section 4.9.8).

The Test Cases in a Test Set are determined by specifying values for Test Case Fields. The Test Case Fields displayed on this screen are called Selectors. Selector Fields are identified as part of Test Case Field configuration (by setting the selectable flag for a Field) and the Fields displayed on this screen thus vary from one Test Suite to another. A similar User Interface is used to select the Test Cases to be covered by reports (see Section 5.2.2).

If no selector values are specified for a Field, that Field matches all Test Cases.

If no selector values are specified for any Fields, the Set contains all the Test Cases in the Suite.

Deleted tests do not match any selection criteria when creating new Test Sets.

The values specified for a Selector and their significance depend on the type of Field:

- For a text Field specify a text string. The string must appear in the Field for a Test Case in order for it to be included in the Test Set. Strings may be case sensitive or case insensitive. Normal strings or Regular Expressions may be used.
    - To match any Test Cases where the Field has a value, use the Regular Expression "^.+$" (without the quotation marks).
    - To match any Test Cases where the Field is empty (has no value), use the Regular Expression "^$" (without the quotation marks).
    - To match any Test Case where the Field contains one of several different strings, use the Regular Expression "string1|string2" (without the quotation marks).
- For a menu Field specify one or more values. A Test Case must have at least one of these values in the Field in order for it to be included in the Test Set. The special value – Empty – matches Test Cases with no value for the Field.
- For date, Creation Date, and Modification date Fields, specify a starting and ending date. A Test Case must have a value for the Field that falls between these dates in order for it to be to be included in the Test Set.
- For Fields that are lists of users specify one or more users. A Test Case must have one of these users in the Field in order for it to be included in the Test Set. For an Author Field pick one of more users who must have been the author of the Test Case. For a Modifying User

Field pick one or more users who must have been the last user to modify a Test Case. The special value – Empty – matches Test Cases with no value for the Field.

- For the ID Field select one or more Folders from a list and/or specify a search string.

  A Test Case must be in one of the selected Folders and have an ID that matches the specified search string in order for it to be included in the Test Set. A blank string matches all Test Cases in the selected Folders. Don't Care selects all Folders.

  The search string should not contain folder names or the slash character. It should not be used with Auto Outline numbered IDs.

  Please note the depth of the Folder list shown may be limited to just a few levels. To see more levels of Folders please refer to the description of the SIZE attribute for the ID Field in the *ApTest Manager Admin Guide*. Normally selecting a Folder does NOT automatically select any of its child Folders (i.e. all the Folders in the list need to be selected individually). However Folders below the depth limit are selected if their parent Folder is selected.

To choose arbitrary Test Cases for a Test Set, create a Set that includes them and use the Rearrange Test Set screen (see Section 4.9.4) to delete any unwanted tests. Rearrange Test Set presents a list of all a Set's Test Cases; and has functions to select and delete tests.

Test Cases in a Test Set are initially ordered as they are in the Test Case tree. Use the Rearrange Test Set screen (see Section 4.9.4) to reorder Test Cases and sort Test Cases in different ways.

Default values for the Session Variables and Schedule for Test Sessions created for this Test Set may be defined. These values are inherited as the default values for newly created Test Sessions. They may then be changed as desired.

Click **Create Test Set** to create the Test Set and return to the Test Set screen. Click **Cancel** to return to the Test Set screen without creating the Test Set.

Test Sets can also be created from within a Coverage Report (see Section 5.8.1) for collections of Test Cases based on how many times they were covered by a group of Test Sessions. For example, a Set of the tests which have never been covered, or only those tests which have already been covered.

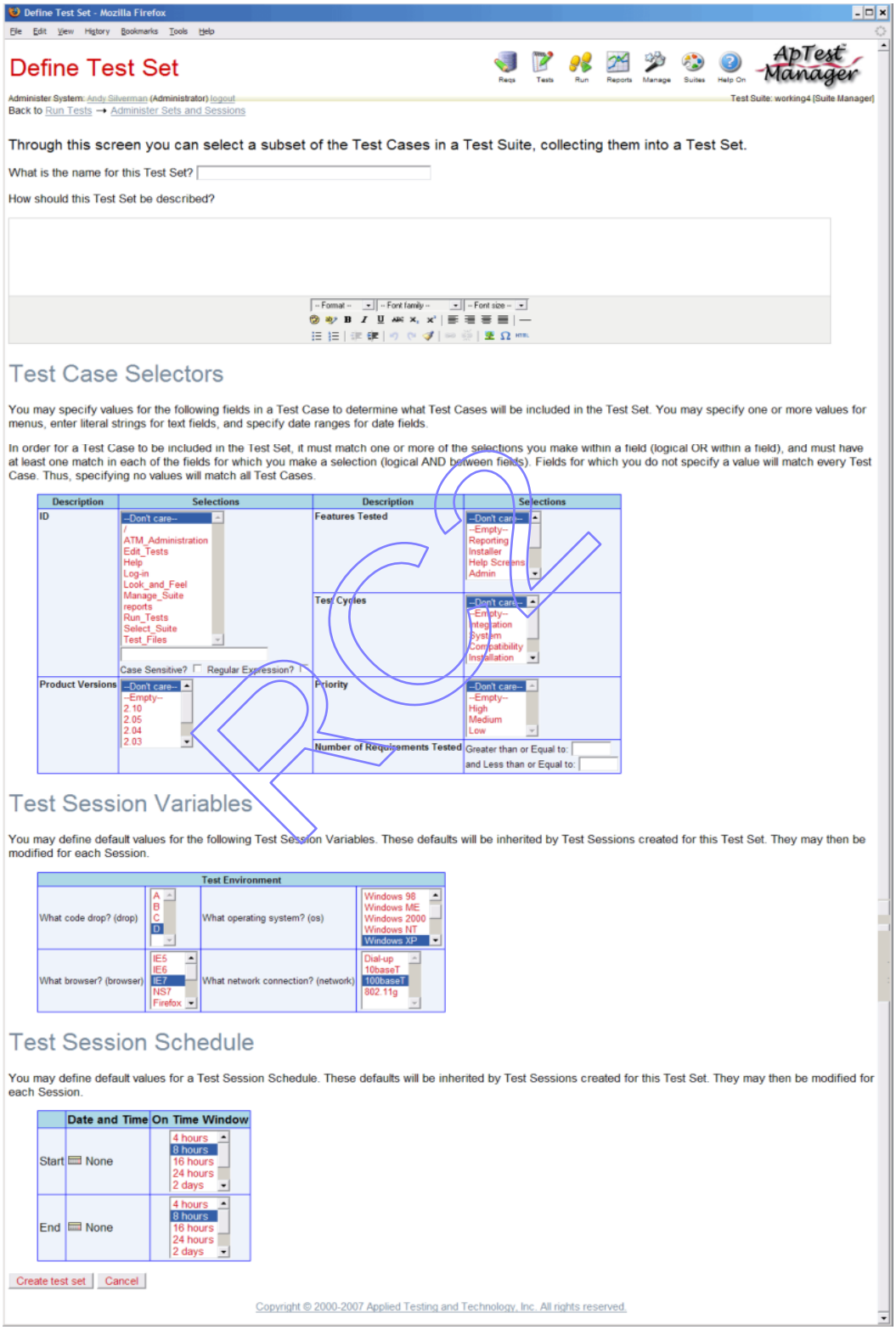


Figure 17 - Define Test Set screen

4.8 Create a Test Session

Click the **Create New Session** icon  to the left of a Test Set in the Test Sets table on the Test Sets screen to display the Create Test Session screen. This screen allows a new Test Session to be created for the Test Set.

Enter a Test Session name in the field provided. Two or more Sessions may share the same name, since a unique numeric identifier is automatically assigned to each Session.

Optionally a description of the Test Session may be entered and a schedule for the start and completion of its execution may be specified. A Session schedule consists of expected start and end dates, with a window of time for each. If the start or end of Session execution occurs within the specified time window following the specified date it is considered to have occurred on time. It is considered early if it happens before the specified start/end date and late if it occurs after the end of the window.

To set a schedule date, click its calendar icon. To clear a date, click the x adjacent to it.

Select the values for the Session Variables for this Session, specifying the test environment in which its tests are run. These values are associated with the Test Session and included in reports for it.

Click **Create Test Session** to create the new Test Session.

The Test Cases run by a Test Session are initially set to those in its Test Set. New Test Cases that are subsequently added to the Test Set are not automatically added to existing Test Sessions. However an existing Test Session can be refreshed to match the current content of its Test Set (see Section 4.10.11).

When a Test Session is created it inherits its Test Case ordering, schedule, and assignments from its Test Set. The execution order, schedule, and assignments for tests in a Test Session can be changed after it is created.

4.9 Manage a Test Set

From the Manage Test Set screen, a user can:

- **Change the Test Set name/selections.** Make changes to the current Test Set name, its description, its Test Case Selectors, and its Session Variable and schedule defaults.
- **Delete the Test Set.** Remove the Test Set and the associated Test Sessions.
- **Copy the Test Set.** Create a copy of the Test Set with a new name. The copy can then be edited to have different option selections from those of the original.
- **Change the order of the Test Set.** Specify the default arrangement of Test Cases for subsequently created Test Sessions for the Test Set.

- **Lock or unlock the Test Set.** A locked Test Set cannot have its option settings altered and cannot be deleted unless it is first unlocked. The unlock option is only available for Test Sets that are locked.
- **Refresh the Test Set.** Reapply the Test Set's Test Case Selectors to the current Test Cases in the Test Suite.
- **Assign the Test Set.** Specify the default Test Case assignments for subsequently created Test Sessions for the Test Set.

Management operations show the Test Set(s) they apply to in a table with the column configuration the user has defined for the Test Sets screen.

4.9.1 Change Test Set Settings

Click the **Change the Test Set name/selections** link from the Manage Test Set screen to display the Change Test Set Settings screen. Enter a new Test Set name and description, change the Test Case Selector values, or change the Test Session Variable or schedule defaults, and click **Change settings** to make the changes. Test Case Selectors may also be changed for multiple Test Sets or to a Folder (see Section 4.6.1). Note that Sets created from the Coverage Report no longer include Test Cases based on how many times they were executed after their Selectors have been changed, and they are then refreshable.

4.9.2 Delete a Test Set

Click the **Delete the Test Set** link from the Manage Test Set screen to remove the current Test Set and all its associated Test Sessions. A confirmation window is displayed. Please exercise caution to not delete a Test Set that may be important. ApTest Manager allows individual Test Sets to be locked to avoid accidental deletion of Test. Note that there is no trashcan for Test Sets – once deleted they cannot be undeleted.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.9.3 Copy a Test Set

Click the **Copy the Test Set** link from the Manage Test Set screen to copy the Test Set. Provide a name for the new Test Set.

Several options are provided for copying the Test Set that control what Test Session information is copied.

Click **Copy** to create the copied Test Set.

4.9.4 Rearrange a Test Set

Test Cases in a Test Set are initially ordered as they are in the Test Case tree. Click the **Arrange the tests in the set** link from the Manage Test Set screen to reorder Test Cases, delete Test Cases, and sort Test Cases in different ways.

Any Test Sessions created subsequently for this Set inherit this new arrangement. It is not applied automatically to existing Test Sessions.

The Arrange Test Set screen presents a list of all the Test Cases in the Test Set and allows their ordering to be changed. Move, sort, and delete Test Cases as many times as necessary until the desired order is achieved. Click **Try Changes** to apply a set of changes. Click **Finished** when done to commit all the changes made, or they will be lost.

Clicking the Delete check box next to a Test Case disables it in the Test Set. However a disabled Test Case can be restored to the Test Set later if desired.

To move one or more Test Cases:

- Click the check boxes for the Test Cases to be moved
- At the top of the screen, select which Test Case number to move them before or after
- Click **Try Changes**

To sort Test Cases follow these steps, specifying the criteria by which they are to be sorted at the top of the screen. Test Cases can be moved and sorted at the same time. When sorting by Execution Result the sort order is determined by the order of the results in the Results Editor screen (see the *Admin Guide* for details on configuring results).

For each Test Case this screen shows the values of each of the selector Fields that is a menu or author Field. Clicking on selector value for a Test Case which is not currently selected selects all the Test Cases with that selector value. Clicking a selector value for a Test Case which is currently selected deselects all the Test Cases with that selector value. Select or deselect Test Cases individually by clicking their select checkboxes, or select/deselect all Test Cases by clicking the top select checkbox.

Don't forget, click **Finished** when done making changes or they will be lost.

4.9.5 Assign a Test Set

Click the **Assign the Test Set** link from the Manage Test Set screen to assign the Test Cases in the Test Set to users and assign values to Execution Fields. Test Sessions created subsequently for this Set inherit these assignments. They are not applied automatically to existing Test Sessions.

A single user or multiple users may be assigned for each Test Case and either single or multiple values for an Execution Field may be set depending on the Field type.

For each Test Case this screen shows the values of the current assignees, those Execution Fields with the settable flag set, as well as each Test Case selector Field of type menu. Clicking a value for a Test Case which is not currently selected selects all the Test Cases with that value. Clicking a value for a Test Case which is currently selected deselects all the Test Cases with that value. Select or deselect Test Cases individually by clicking their select checkboxes, or select/deselect all Test Cases by clicking the top select checkbox.

Select a value or values in one of the menus of values and click **Set Assignments** to set those values in the selected tests. If no values are selected, or –Clear values – is selected for a single select menu Field, the Field is cleared. Set Assignments as many times as needed to assign different tests in a set to different users and assign different Execution Field values.

Click **Finish** when done to commit all the changes made, or they will be lost.

4.9.6 Lock a Test Set

Click the **Lock the Test Set** link from the Manage Test Set screen to lock the current Test Set so that it may not have its settings changed or be deleted. When a Test Set is locked the only choices that appear in the Manage Test Set screen for it are those to copy the Set and, if the user has a sufficient level of access, to unlock it.

4.9.7 Unlock a Test Set

If a Test Set is locked a link is provided to unlock it. Click the **Unlock the Test Set** link from the Manage Test Set screen to unlock the current Test Set so that it may again have its settings changed and be deleted.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.9.8 Refresh a Test Set

Test Sets are static – new Test Cases added after the Set was created are not automatically added to it, even if they meet the Set's selection criteria.

Click the **Refresh the Test Set contents** link from the Manage Test Set screen to reapply the Test Case Selectors for the Test Set against the current tree of Test Cases for the Test Suite. Any additional Test Cases that match the Set's selectors are added to the Set and any Test Cases that do not are removed. Test Cases that were deleted from the Test Set remain disabled.

The user has the option of having the Test Cases in the Set ordered as per their order in the Test Suite's Test Case tree, or keeping the order of the original Test Set. In the later case new Test Cases are added at the beginning of the Test Set. Thus it may be desirable to rearrange the Test Set after refreshing it.

This operation is useful after copying a Test Set and changing its selectors, so it includes different Test Cases; e.g. those for a new release. Optionally all the current Test Sessions for this Test Set may be refreshed as well. This operation may also be applied in bulk to multiple Test Sets or to all the Test Sets in a Folder (see Section 4.6.1).

Note that the Refresh link is not provided for Sets that are based on selections made in the Coverage Report.

4.10 Manage a Test Session

From the Manage Test Session screen, a user can:

- Click **Change the test session name/schedule** to rename the Session or change its schedule.
- Click **Change the test session variables** to modify the Session's Variable values.
- Click **Delete the test session** to delete the Session.
- Click **Clear the test session results** to clear the Test Session's results. Note that clearing the results removes *all* information captured during previous runs of this Session.
- Click **Copy the test session** to copy the Test Session configuration.
- Click **Import results into the session** to bring data into the Test Session from a CSV file.
- Click **Arrange the tests in the session** to rearrange the Test Cases in the Test Session.
- Click **Assign the tests in the session** to assign each Test Case in the Test Session to one or more users and assign values to settable Execution Fields.
- Click **Lock (or Unlock) the test session** to lock (or unlock) the Session. Once a Session has been locked, only the Copy and Unlock options are available.

Click **Refresh the test session contents** to update the Test Cases in the Test Session from its Test Set.

Management operations show the Test Session(s) they apply to in a table with the column configuration the user has defined for the Run Tests screen.

4.10.1 Change a Test Session's Variables

Click the **Change the test session variables** link from the Manage Test Session screen to display the Change Test Session Variables screen. Enter new Variable values using the fields provided and click **Change Variables** to make the change.

The Set Test Session Variables operation can be used to set the values of Session Variables for multiple Test Sessions.

4.10.2 Delete a Test Session

Click the **Delete the test session** link from the Manage Test Session screen to remove the current Test Session. A confirmation window is displayed. Please exercise caution so as not to delete a Test Session that may be important. ApTest Manager allows individual Sessions to be locked to avoid accidental deletion. Note that there is no trashcan for Test Sessions – once deleted they cannot be undeleted.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.10.3 Clear a Test Session's Results

Click the **Clear the test session results** link from the Manage Test Session screen to clear all execution data from the current Test Session, including the planned and actual Session schedule. A confirmation window is displayed. Please exercise caution to not to clear important information. ApTest Manager allows individual Sessions to be locked to avoid accidental clearing of information.

4.10.4 Change a Test Session's Name/Schedule

Click the **Change the test session name/schedule** link from the Manage Test Session screen to display the Change Test Session Name/Schedule screen. Enter a new Session name or description in the fields provided and/or modify its start/end schedule and click **Update** to make the changes.

4.10.5 Copy a Test Session

Click the **Copy the test session** link from the Manage Test Session screen to copy the Test Session. A different name may be specified for the new Test Session. Some may find it unnecessary to rename the Test Session and elect to retain the original name, since a unique identifier is automatically assigned to distinguish the copy from the original Session.

All, none, or part of the Test Session's run information may be copied to the new Session. Just those tests in the original Session that have specific results can be enabled in the copy. Other tests are disabled (but may be renabled from the Reorder tests operation (see Section 4.10.7)).

If results or all information is copied the Session Schedule, both planned an actual, is copied. Otherwise it is cleared.

4.10.6 Import Information into a Test Session

Click the **Import results into the session** link from the Manage Test Session screen to import information into the Test Session from a local Comma Separated Values (CSV) file. Results, execution times, and execution notes for any or all of the Test Cases in the Session may be specified in this file. The CSV file must contain at least the following fields:

ID	the name of a Test Case that is in the Session.
RESULT	the result of executing the test. This must be one of the results defined for the Suite.
NOTES	Notes about the execution of the test.

It can also contain the following fields:

STAFFTIME	The amount of time it took to run the Test Case (only useful if the Test Suite's Test Case Fields includes a plannedtimestaff Field). Time values must be specified in units of minutes. Integer (e.g. 2) or real (e.g. 2.5) values are supported.
CLOCKTIME	The amount of time it took to run the Test Case (only useful if the Test Suite's Test Case Fields includes a plannedtimeclock Field). Time values must be specified in units of minutes. Integer (e.g. 2) or real (e.g. 2.5) values are supported.

In addition, it can contain any fields in the Suite's Execution Field configuration, for example:

ATM_PRID	The problem report ID for the test
ATM_PRLINK	A link to the problem report in a bug-tracking system

Any fields that do not match the Execution Field configuration, or one of the special fields listed

above, are ignored. The first line of the file must be the field names.

An example CSV file might look like:

ID,RESULT,NOTES,ATM_PRID

mytestcase,pass,"some notes about this test case",42

myothertestcase,fail,"another test case with notes",43

This option may be used to import the results of running automated tests into ApTest Manager.

To import results from an external program, the script `ATM_ROOT/bin/importResults` may be used. This script also allows a Test Session to be automatically created and its Session Variables to be set. See the script's internal documentation for details.

4.10.7 Rearrange a Test Session

The order of Test Cases within a Test Session is copied from its Test Set when the Session is created but may be modified later. Click the **Reorder tests** link from the Manage Test Session screen to reorder Test Cases, delete Test Cases, and sort Test Cases in different ways.

The Arrange Test Session screen presents a list of all the Test Cases in the Test Session and allows their ordering to be changed. Test Cases can be moved, sorted, and deleted as many times as needed until the desired order is achieved. Click **Try Changes** to apply a set of changes to the current order. Click **Finished** when done to save changes, otherwise they will be lost.

Clicking the Delete check box next to a Test Case removes it from the Test Session; permanently deleting all previously entered execution data. A Test Case may be restored to the Session by clearing its Delete check box.

To move one or more Test Cases,

- Click the check boxes for the Test Cases to be moved
- At the top of the screen, select the Test Case number to move them before or after
- Click **Try Changes**

To sort Test Cases follow these steps and at the top of the screen specify the criteria by which they are to be sorted. Test Cases can be moved and sorted at the same time. When sorting by Execution Result the sort order is determined by the order of the results in the Results Editor screen (see the *Admin Guide* for details on configuring results).

For each Test Case this screen shows the values of each of the Test Case selector Fields that is a menu or author Field. Clicking on a value for a Test Case which is not currently selected selects all the Test Cases with that value. Clicking a value for a Test Case which is currently selected deselects all the Test Cases with that value. Select or deselect Test Cases individually by clicking their select

checkboxes, or select/deselect all Test Cases by clicking the top select checkbox.

Don't forget, click **Finished** when done making changes, or they will be lost.

4.10.8 Assign a Test Session

The assignments for a Test Session are copied from its Test Set when the Session is created but may be modified later. Click the **Assign the test session** link from the Manage Test Session screen to alter the assignments of Test Cases in the Session to users and values to Execution Fields. A single user or multiple users may be assigned for each Test Case and either single or multiple values for an Execution Field may be set depending on the Field type.

For each Test Case this screen shows the values of the current assignees, those Execution Fields with the settable flag set, as well as Test Case selector Fields of type menu. Clicking on a value for a Test Case which is not currently selected selects all the Test Cases with that value. Clicking a value for a Test Case which is currently selected deselects all the Test Cases with that value. Select or deselect Test Cases individually by clicking their select checkboxes, or select/deselect all Test Cases by clicking the top select checkbox.

Select a value or values in one of the menus of values and click **Set Assignments** to set those values in the selected tests. If no values are selected, or –Clear values – is selected for a single select menu Field, the Field is cleared. **Set Assignments** as many times as needed to assign different tests in a Session to different users and set different Execution Field values.

When all changes have been made, click **Finished**. Don't forget, as changes are not actually applied to the Test Session until **Finished** is clicked.

An example application of assigning Execution Field values is setting the priority of Test Cases on a per Session basis. Define an Execution menu Field for test priority, marking it as settable and readonly, and include it in the Test Case Execution templates. Then use this screen to assign a priority value to each Test Case. The user running the Session sees the assigned priority value for each Test Case executed. This value may be assigned differently from one Test Session to another for the same Test Case.

4.10.9 Lock a Test Session

Click the **Lock the test session** link from the Manage Test Session screen to lock the current Test Session so that it may not be run, deleted, or changed. When a Test Session is locked, the only choices that appear in the Manage Test Session screen for it are those to copy the Session and, if the user has a sufficient level of access, to unlock it. On the Run Tests screen the Run icon for a locked Session is replaced with a lock icon.

4.10.10 Unlock a Test Session

If a Test Session is locked, click the **Unlock the test session** link from the Manage Test Session screen to it so it may again be run, deleted, and changed.

This feature may be restricted to users with administrative privilege through the Manage System Configuration screen.

4.10.11 Refresh a Test Session

Click the **Refresh the test session contents** link from the Manage Test Session screen to update the Test Cases contained in the Test Session to match those of its Test Set.

This can be useful if the Test Set has been changed since the Test Session was created.

The user has the option of having the Test Cases in the Session ordered as per their order in the Test Set, or keeping the order of the original Test Session. In the later case new Test Cases are added at the beginning of the Test Session. Thus it may be desirable to rearrange the Session after refreshing it.

Test Cases that were deleted from the Test Session remain disabled.

Chapter 5

5 Viewing Reports

ApTest Manager provides real-time access to reports on test projects. Information about test definitions, the results of running tests, testing progress, etc. can be retrieved and viewed with a browser from any location.

5.1 Requesting a Report

The Select Reports screen shown in Figure 10 is used to generate a report. Select Reports provides a table of Test Sessions that may be reported on and a list of the reports available. To request a report:

1. Select the report to be generated from the Report Type list.
2. Click the checkbox to the left of a Test Session in the table of Sessions to report on that Session. For a Regression Report click the boxes for two or more Sessions. For a Progress, Coverage, Schedule, User Report or a templated Requirements report, click the boxes for one or more Sessions.
3. Click **Generate Report**.

5.1.1 Available Reports

A variety of reports are available to choose from.

- Progress Report – Shows the status of testing for all or part of a testing project
- Users Report – Shows work performed by specific users for a project
- Coverage Report – Shows how much test coverage has been achieved by a project.
- Regression Report – Compares the results of multiple executions of a set of tests
- Schedule Report – Shows which Sessions in a project started on-time, late, and early

- Templated Reports - Any number of templates may be defined for reports on Requirements and Test Cases. These templates specify the Fields that are shown in the report and how they are presented (e.g. as a spreadsheet, a series of tables, etc.). Each report template has a unique name, such as the Test Specification report, Test Requirements report, Test Results report, etc. Templated reports are included in separate sections of the Report Type list.

  Test Case templated reports show execution results for a single Test Session. Requirements templated reports provide execution results and requirements traceability on a per Requirement basis for one or more Sessions.

- Saved Settings – Each report has options available to customize its behavior: how results are sorted, which Requirements and Test Cases to include, etc. An unlimited number of saved report settings can be defined and named. Saved report settings are included in the Report Type list. Selecting a saved setting from the list thus allows that saved report configuration to be generated with just a click.

5.1.2 Selecting Sessions

The table of Sessions on the Select Reports screen is itself a report of sorts, providing valuable management information such as all the Sessions run by a particular user during the last month.

For each Session the table can show:

- The associated Test Set
- The name of the Session, number, and locked status of the Session
- The total number of tests and the number of unexecuted tests in the Session
- The date it was last executed
- The user that last executed it
- Its planned and actual start and end dates. The color of an actual date indicates if it was early, on time or late (blue, green, and red respectively)
- The users that have Test Cases assigned
- The Session description
- The values of its Session Variables.

To select the information to show for each Session in the table, click the  icon in the table header. It is advisable for readability to just display a modest number of columns in this table.

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Session Selection fields located at the bottom of the screen control what Sessions are shown in the table: A Session must match at least one selected value in each selection field in order to be displayed. This allows the display to be limited to just the Sessions for the current project, the to-do list for a specific tester, the testing performed in a particular test environment, etc.

- Test Sets –specify the Test Sets for which Test Sessions are shown.
- Dates –specify a time period during which the Test Sessions shown were executed.
- Users –specify the ApTest Manager users who ran the Test Sessions shown.
- Locked –specify only locked or unlocked Test Sessions. By convention Sessions are locked when their project is completed. This prevents accidental modification of previous results while keeping them available for comparison purposed. All Sessions that are unlocked are therefore the testing being performed in the current project.
- Run- specify only completed, never run, or partially complete Test Sessions.
- Assigned users –specify only Test Sessions with Test Cases assigned to specific users are shown.
- Schedule – specify Test Sessions that started or ended early, on time, or late.
- Session Variables– a selection field is provided for each Session Variable that is marked as selectable. These fields present menus of values or fill in fields for text searches that specify which Test Sessions are shown based on their Variable values. Strings for text searches are case insensitive.

Click **Filter Session Table** to get to these fields.

The Test Sets, Users, and Session Variable fields for Session selection allow choosing multiple values from among those displayed. The keystrokes required to do this vary from browser to browser; consult the browser's documentation for details. Often the Shift and Control keys can be used to select specific values or ranges of values.

After changing Session selection fields click **Apply Selections**; the table of Sessions is changed appropriately. Clicking **Show all Sessions** causes the table to show all a Suite's Test Sessions.

Clicking **Compact Session Variables** limits how much information is displayed for a Session Variable to the first 32 characters of the first Variable value. A Variable whose value is not fully displayed has a blue triangle appended to the information that is displayed. Placing the mouse over this blue triangle shows the entire value as a tool tip. Click **Expand Session Variables** to show the entire value of Session Variables.

Values of the Session Selection fields, Report Type field, and the Session table's sort-by column can be saved by clicking **Save Settings**. These values are applied when the Run Test screen is visited in the future, until different values are saved. Settings are saved on a per-user basis for each Test Suite. Thus each user can set up filtering selections for this screen that are applied each time they visit it for this Test Suite.

5.1.3 Sorting Sessions

The way the table of Sessions is sorted can be changed by clicking on one of the titles of the columns in the table. The table is resorted based on the title clicked. Clicking that title again reverses the sort order. An up () or down () arrow is displayed next to the header for the column on which the table is currently sorted. The Description and Session Variable columns are not used for sorting.

5.2 Customizing Reports

Each report offers a number of options for customizing it. Customization options can limit the tests the report applies to, suppress portions of the report, request the report be output in CSV format, etc.

To customize a report select it from the Report Type menu, click **Customize Report**, and modify the settings for the report. From the Customize Report screen the selected report can be generated with the specified custom settings by clicking **Generate Report**. The custom settings can also be saved for reuse in the future.

5.2.1 Saving Settings

An unlimited number of saved setting customizations may be assigned names and saved: private settings available for reuse just by the user that saved them and public settings available to all users of the Suite.

As customized settings are saved for reports their names are automatically added to the Report Types list under the names of the reports they customize. For example, if sets of custom settings for the Progress Report named Short Status and Full Status are saved, the list of report types would include the Progress Report as well as Short Status and Full Status. Saved customized reports can thus be generated easily – the same way as base reports are – without the need to respecify the custom settings for them.

To create a saved report setting from the Customize Report screen supply a name for the customized settings, indicate if the saved settings should be public or private, indicate if existing saved settings with the same name should be overwritten, and click **Save Custom Settings**.

To modify a saved report setting, select it by name from the Report Type menu and click **Customize Report**. The saved settings are displayed and can be renamed, deleted, or modified.

If the settings of a base report (e.g. the Users Report or a Template report) are modified and saved without specifying a new name for these settings they are saved as private customized settings with the same name as the base report.

Settings for a base report cannot be deleted or renamed.

Users with Suite Manager access and ApTest Manager Administrators have access to all the private saved settings for users of a Test Suite by clicking **Show Others' Reports** from the Select Reports screen.

5.2.2 Queries

For many reports, customization includes the ability to specify the Test Cases to be included in the report based on Field values. Requirements Fields, Test Case Fields, and Execution Fields, as applicable, may be queried.

An example of the interface for these queries is shown in Figure 18. The interface allows values to be specified that must appear in Test Case Fields in order for a Test Case to be included in the report. This powerful mechanism allows viewing reports on Test Cases based on a wide variety of criteria. A similar User Interface is used to specify the Test Cases in Test Sets (see Section 4.7).

If no values are specified for a Field, that Field matches all Test Cases. If no values are specified for any Fields, the report contains all the Test Cases in the Test Sessions on which it is reporting.

The values that can be specified for a Field and their significance depend on what type of Field it is:

- For a text Field specify a text string which must appear in the Field in order for a Test Case to be included in the report. Strings may be case insensitive or case sensitive. Normal strings or Regular Expressions may be used.
    - To match any Test Cases where the Field has a value, use the Regular Expression "^.+$" (without the quotation marks).
    - To match any Test Cases where the Field is empty (has no value), use the Regular Expression "^$" (without the quotation marks).
    - To match any Test Case where the Field contains one of several different strings, use the Regular Expression "string1|string2" (without the quotation marks).
- For a menu Field specify one or more values. A Test Case must have at least one of these values in the Field in order for it to be included in report. The special value – Empty –matches Test Cases with no value for the Field.
- For date Fields, Creation Date, and Modification date Fields, specify a starting and ending date. A Test Case must have a value for the Field that falls between these times in order for it to be to be included in the report.
- For Fields that are lists of users specify one or more users. A Test Case must have one of these users in the Field in order for it to be included in the report. For an Author Field pick one of more users who must have been the author of the Test Case. For a Modifying User Field pick one or more users who must have been the last user to modify a Test Case. The special value – Empty –matches Test Cases with no value for the Field.
- For the ID Field select one or more Folders from a list and/or specify a search string.

A Test Case must be in one of the selected Folders and have an ID that matches the specified search string in order for it to be included in the Test Set. A blank string matches all Test Cases in the selected Folders. Don't Care selects all Folders.

The search string should not contain folder names or the slash character. It should not be used with Auto Outline numbered IDs.

Please note the depth of the Folder list shown may be limited to just a few levels. To see more levels of Folders please refer to the description of the SIZE attribute for the ID Field in the *ApTest Manager Admin Guide*. Normally selecting a Folder does NOT automatically select any of its child Folders (i.e. all the Folders in the list need to be selected individually). However Folders below the depth limit are selected if their parent Folder is selected.

5.2.3 Querying Problem Reports

One application of the query interface is to locate all the tests that had problem reports filed for them (i.e. for which Problem Report IDs were entered when they were run). This is done by entering the Regular Expression "^.+$" (without the quotation marks) as the matching criterion for the Problem Report IDs Execution Field. This matches any non-empty value, and thus select only those Test Cases for which a PR number was entered into the Field.

In a Test Results report this displays Test Case information including the PR IDs and the links to the problem reporting system for them. In a Progress Report the PR IDs are displayed. Click the link to the specific test result (a gray triangle in the Test Case Details table) to display the complete Test Case, including the PR links.

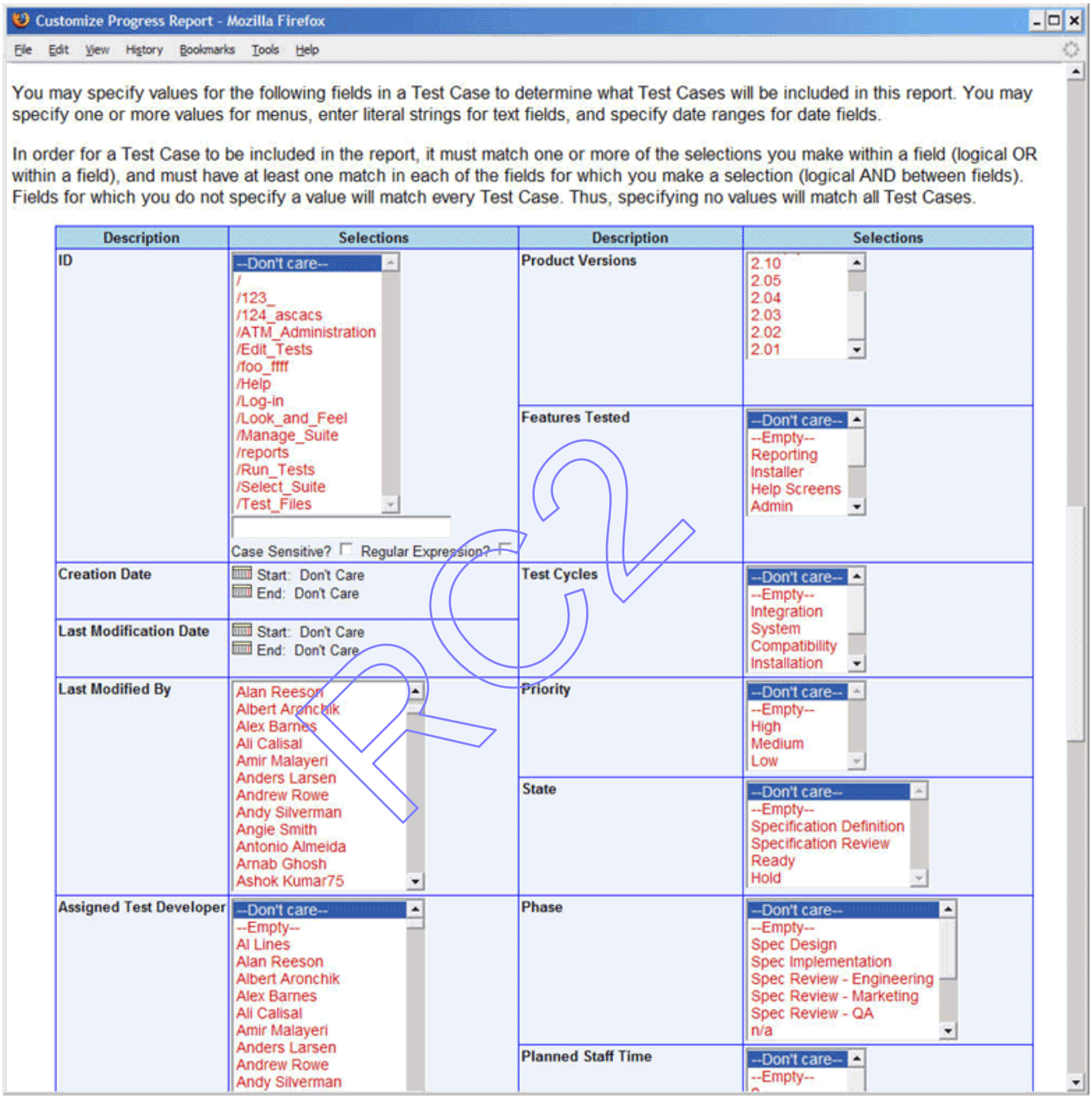


Figure 18 - Query Test Case Interface

5.2.4 Selector Summaries

For many reports optional tables can be included that summarize the Test Case results in the report based on the values of selector Fields. Sample tables are shown in Figure 19.

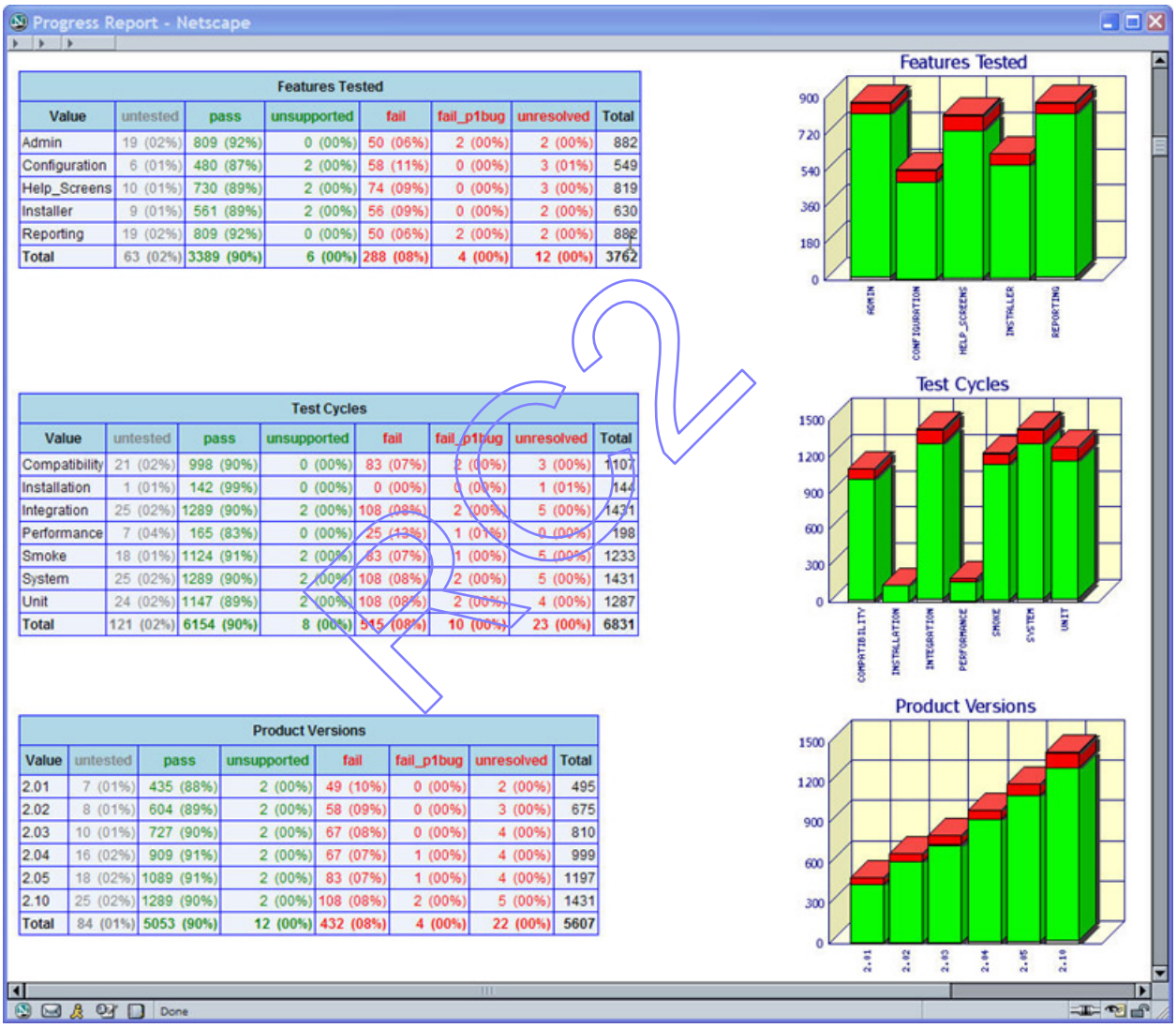


Figure 19 - Selector Summary Tables

In templated Requirements reports there may be multiple results for the execution of associated Test Case in different Sessions. In this case selector summaries are calculated based on the worst result for the execution of associated tests for each Requirement.

5.2.5 Graphs

For many reports graphs may optionally be included.

5.2.6 Export in CSV Format

The Customize Report screen for Templated reports, the Progress report, and the Regression report provide an option for the report to be produced as a Comma Separated Values (CSV) file. If the browser has an appropriate helper application, for example Excel, configured for this format it should automatically open a CSV report.

To export Test Cases use a Templated report configured to contain those Fields to be exported.

Please note that when exporting a value for the ID field the ID of the Requirement/Test Case is exported (with the full path); name part fields can be exported separately. If an auto-outlined ID is exported the folders in the path do not include their outline numbers and the ID is exported as the (underlying) auto numbered value for the Requirement/Test Case.

5.2.7 Compacting Session Variables

Each report allows selection of whether Session Variable values should be compacted. Session Variable values are shown in the header at the top of a report. If compaction is selected the length of a Variable's value is limited to 32 characters, with the entire value show in a tool tip if the mouse is placed over an icon displayed at the end of the portion of the value that is shown.

5.3 Saving, Bookmarking, and E-mailing Reports

There are two alternative ways an ApTest Manager report may be saved or emailed:

- Using a reference to the report: a bookmark or a link. Do this to see the current data each time the reference is viewed. For example; to get an updated status report for a project.
- Saving the report itself to a file. Do this to see the same data each time the report is viewed. For example, to get a daily status report for a project.

When a bookmark or link is accessed the report is retrieved anew from ApTest Manager. This requires logging in to ApTest Manager with an ApTest Manager account (which uses a license seat). Unless links to ApTest Manager in the report are clicked viewing a saved report does not require logging in to ApTest Manager.

One way to save a report is printing it in PDF format. PDF creation software (such as PrimoPDF, a free PDF creator) must be available to print to. Printing colors may require setting up the browser. In

Internet Explorer there is an option to print background colors in the Advanced tab of the Internet Options box. In Firefox this can be setup under Page Setup.

A report can also be saved as a web page. For example:

- With Internet Explorer select **Save As** from the File menu.
- With Firefox select **Save Page As** from the File Menu.

Both Internet Explorer and Firefox allow files to be saved as type `WebPage, complete`. This creates a static HTML file and a directory of associated images that can be recalled at any time by using a browser to open the file. These saved reports can also be emailed. When moving the saved report, remember to move the directory of images along with the HTML file.

Internet Explorer also allows files to be saved as type `Web Archive`, which includes the HTML and images in a single file. This file can be opened with Internet Explorer, but is not compatible with other browsers such as Firefox.

A report saved as HTML can also be opened with Microsoft Word which will convert it to a Word document.

Most reports can also be exported as a CSV file (and read into Microsoft Excel or Access (see Section 5.2.6).

5.4 Templated Reports

Templated reports can be configured to display different Fields, for purposes such as a Requirements Traceability report or a Test Specification report. Information can be formatted in different ways, as a spreadsheet or a series of tables for example.

A report template defines the information displayed for a single Requirement or Test Case. When information about several Requirements or Test Cases is displayed in a report, the template is applied to each Requirement/Test Case.

Some of the Customize Report options may be specified for a template, allowing different default values to be associated with different templates.

Several Templated reports are likely defined by the Profile used when a Test Suite was created. With a suitable level of access to a Suite, new templates can be created and existing templates can be modified, copied or deleted by clicking the Manage icon. See the *ApTest Manager Admin Guide* for details. The examples in this chapter show some of the example definitions shipped with ApTest Manager.

Templated reports may be paginated, i.e. broken up into several screens, based on the pagination limit defined for the current user. Otherwise a table of contents is first given which has hyperlinks to the information by Test Case. Click a link to move downward to the Test Case, or use the browser's scroll bar to navigate downward through the report.

There are two types of report templates, based on the type of fields they contain: Test Case report templates and Requirements report templates. Each templated report is included in the list of reports available on the Select Report Screen.

5.4.1 Templated Test Case Reports

Templated Test Case Reports may contain Test Session execution information as well as Test Case Fields. They are generated from the Select Report screen for a single Session. If generated with multiple Sessions selected the report applies only to the first Session.

Templated Test Case reports that do not include execution information can also be applied to the Test Suite as a whole. These Templated reports also appear on the Edit Tests screen where they can be used to report on the contents of the Test Case tree.

5.4.2 Templated Requirements Reports

Templated Requirements reports show information for the Requirements in a Test Suite.

The report also shows information about the Test Cases linked to each Requirement (one Test Case per row in a table below the Requirement itself).

Requirements templated reports are generated from the Select Report screen for one or more Sessions. Requirements with Test Cases linked to them in the Session(s) are included in the report. Information about each execution in the Session(s) of each such Test Case is shown. This provides a Requirement execution report for a collection of Sessions– the results of the execution of Test Cases on a per Requirement basis. Requirements with no Test Cases in the Session(s) linked to them are not included in the report.

Results information is accumulated on a per Requirement basis so the best, worst, and average results for the Test Case linked to the Requirements can be shown.

Requirements templated reports are also available from the report list on the Edit Requirements screen, where they can be used to create reports on the Requirements tree. This provides Requirements coverage and Requirement traceability reports – the number and identity of the tests linked to each Requirement.

Information can be reported for all the Requirements in a Test Suite, or by customizing the report it can be applied to a subset of these Requirements based on a query of their characteristics

The Fields shown for a Test Case can be configured with Customize Report and can contain execution information if desired. If a templated Requirements report is generated from the Edit Requirement screen, “n/a” is displayed for execution information (indicating it is not applicable to the report).

5.4.3 Customizing Templated Reports

Using the Customize Report screen a Templated report can be customized in various ways, such as:

- The Requirements and Test Cases in the Test Session to be included in the report. Values for any combination of Fields can be entered to query Requirements and Test Cases for inclusion in the report.

  For example, to see a report on just those tests where Problem Reports were filed, enter "^.+$" (without the quotation marks) into the Problem Report IDs string and click the Regular Expression checkbox (this matches any non empty Field value).

- If graphs are to be included.

- Whether an HTML or CSV (Comma Separated Values) format should be generated. If a CSV report is selected the browser should invoke an application such as Excel to view and further process the report information.

- If a Table of Contents should be generated. The Table of Contents provides links to the details of the tests in the report. If it is not selected just the test details are provided. The Table of Contents is not produced when a report is paginated (it is produced when a print version is requested).

- Whether tables and graphs summarizing the number of tests by selector values should be generated. Summaries may be generated for selector Fields containing lists of values.

- How the tests are sorted. Up to four different sort criteria and the order in which they are applied may be specified. If no sort order is specified the default order depends on where the report is generated. The order of Requirements/Test Cases in the Requirement/Test Case tree is used if the report is generated from the Edit Requirements/Tests screen. If the report is generated from the Select Reports screen Test Session order is used.

- For Requirements templated reports, the information displayed for Test Cases linked to Requirements, as well as if Requirements with no associated Test Cases meeting the Test Case characteristics for the report should included in the report or not.

- How Requirements/Test Cases in the report are to be grouped. A Field to group by can be selected in which case the Requirements/Test Cases in the report are shown grouped by the values of this Field. For example, if a Priority Field is specified and has values High, Medium, and Low, the report presents 3 groups of Requirements/Test Cases: those with Priority High, Priority Medium, and Priority Low.

5.4.4 Links to Templated Reports

Other reports link to Templated Test Case reports, via mechanisms such as links and gray triangle icons. In determining the template to use in these cases ApTest Manager first looks for a template

named Test Results. If there is no such template it looks for any template containing results information. If no such template is defined an error is reported.

5.4.5 Including files in Templated Reports

Templated reports include within the report the contents of two special files, if the files are present in the Requirement/Test Case tree for the Test Suite. These may be used to provide information such as overview material, signature blocks, or instructions related to the report.

Three sets of the files are defined: one set for Test Case templated reports that contain only Test Case information, a second set for Test Case templated reports that also contain execution information and a third set for Requirements templated reports.

FILE	TREE	TEMPLATE TYPE	PLACEMENT IN REPORT
description.html	Test Case	Test Case	Top of report, below report header
description1.html	Test Case	Test Case	Before Test Case Details section
description-results.html	Test Case	Test Case with Execution Fields	Top of report, below report header
description1-results.html	Test Case	Test Case with Execution Fields	Before Test Case Details section
description-requirements.html	Requirement	Any Requirement	Top of report, below report header
description1-requirements.html	Requirement	Any Requirement	Before Requirement Details section

These files must contain information formatted with HTML, which may be produced with any HTML editing tool. In order to be included in reports they must be uploaded into the top level folder of the appropriate tree for a Test Suite.

5.5 Regression Report

The Regression Report shows differences in results between Test Cases in two or more Test Sessions.

The report provides comparisons of different test runs that are useful for purposes such regression analysis across different releases and comparing behavior of a product on different hardware/software platforms.

The Regression Report also links to reports for the Test Sessions and Test Cases it is reporting on, allowing easy access to more detailed information on specific tests and results.

- Click an underlined Test Session name to see a complete Templated report for that Session.
- Click a gray triangle in the Result Totals table to see a Templated report for all Test Cases with a particular result in a particular Session.
- Click a Test Case name in the `Results that are different` table or the `Results that are the same` table to view the Test Case.
- Click a gray triangle in the `Results that are different` table or the `Results that are the same table` to see a Templated report for a particular Test Case in a particular Session.

5.5.1 Customizing the Regression Report

Using the Customize Report screen a Regression Report can be customized in various ways, such as:

- Whether an HTML or CSV (Comma Separated Values) format should be generated. If a CSV report is selected the browser should invoke an application such as Excel to view and further process the report information.
- The results to be displayed.

  A table of results that differ between the Test Sessions being compared is always shown.

  A table of results that are the same across all these Sessions may also be shown and the test results that are shown can be selected. For example, a report showing Test Cases with results that were different in some Test Sessions along with those Test Cases that failed in all Sessions.
- How the results are sorted. Up to four different sort criteria and the order in which they are applied can be specified. For example tests sorted by result and then by Class of test within each result, or perhaps first sorted by Class and then by result within each Class.

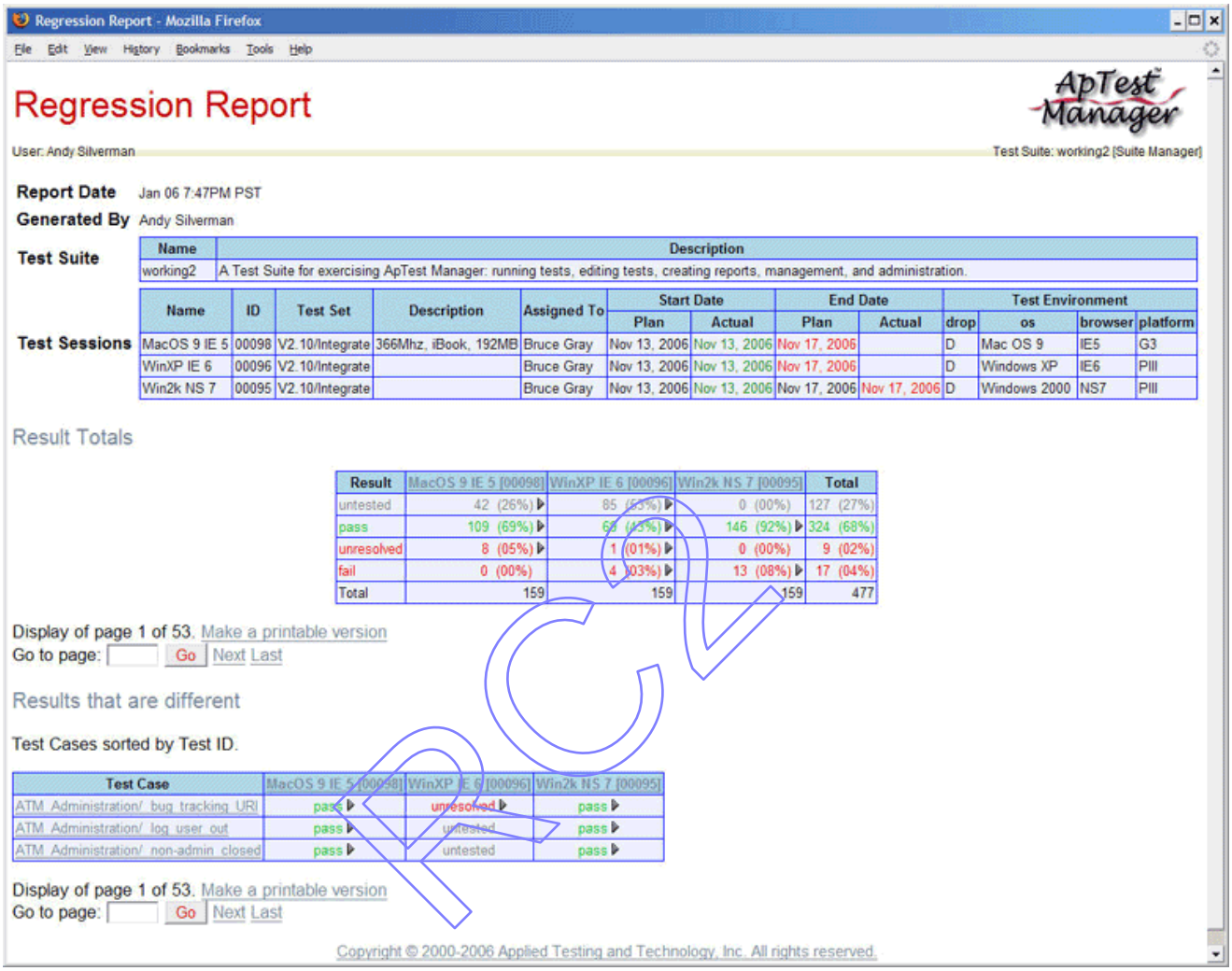


Figure 20 - Regression Report

5.6 Progress Report

The Progress Report provides a summary and several levels of detail about a test project composed of one or more Test Sessions. If all of a project's Sessions are included the report shows the status of the whole project. A report can also apply to any portion of a project, for example just covering a specific test environment or a specific test cycle.

Tables summarizing the results of the project by Test Sessions, Test Sets and the values of selector Fields can be included.

If Time Tracking is enabled for the Test Suite, the Progress Report also shows planned and actual execution times and the variance between planned and actual test schedules.

Details of the results of Test Cases across the Sessions in the report are also provided, by default:

- Results
- Set Name
- Notes
- The expected and actual execution time and any variance

The information shown may be customized by the user.

The Progress Report also links to reports for the Test Cases and Test Sessions it is reporting on, allowing easy access to more detailed information on specific tests.

- Click an underlined Test Session name in the `Results by Session table` or the `Test Case Details` table to see a compete Templated report for that Session.
- Click a Test Case name in the `Test Case Details` table to View a particular Test Case.
- Click a gray triangle in the `Test Case Details` table to see a Templated report for a particular Test Case in a particular Session.

5.6.1 Customizing the Progress Report

Using the Customize Report screen a Progress Report can be customized in various ways, such as:

- If graphs are to be included.
- Whether tables summarizing the number of tests by selector values should be generated. Tables may be generated for selector Fields of type Menu, ID, and Author.
- Whether tables summarizing results by Set and Session, the Test Case Details table, and the Session Completion table should be generated and whether Session Variable information should be displayed.
- What results define the tests included in the Test Case Details section. By default details are shown for all Test Cases. Selecting one or more results limits the tests included in this section to just those with the specified result codes in one or more Sessions.
- How the tests in the Test Case Details section are sorted. Up to four different sort criteria and the order in what they are applied can be specified. For example tests sorted by result and then by Class of test within each result, or perhaps first sorted by Class and then by result within each Class.
- The Test Cases in the Test Sessions to be included in the report. Values for any combination of Fields can be entered to query Test Cases for inclusion in the report.

  For example:

- To see a report on just those tests where Problem Reports were filed, enter "^.+$" (without the quotation marks) into the Problem Report IDs string and click the Regular Expression checkbox (this matches any non empty Field value).
- To see a report for just those tests run during a period of time, use the calendar controls for Last Execution Time to specify the start and end dates of the period.

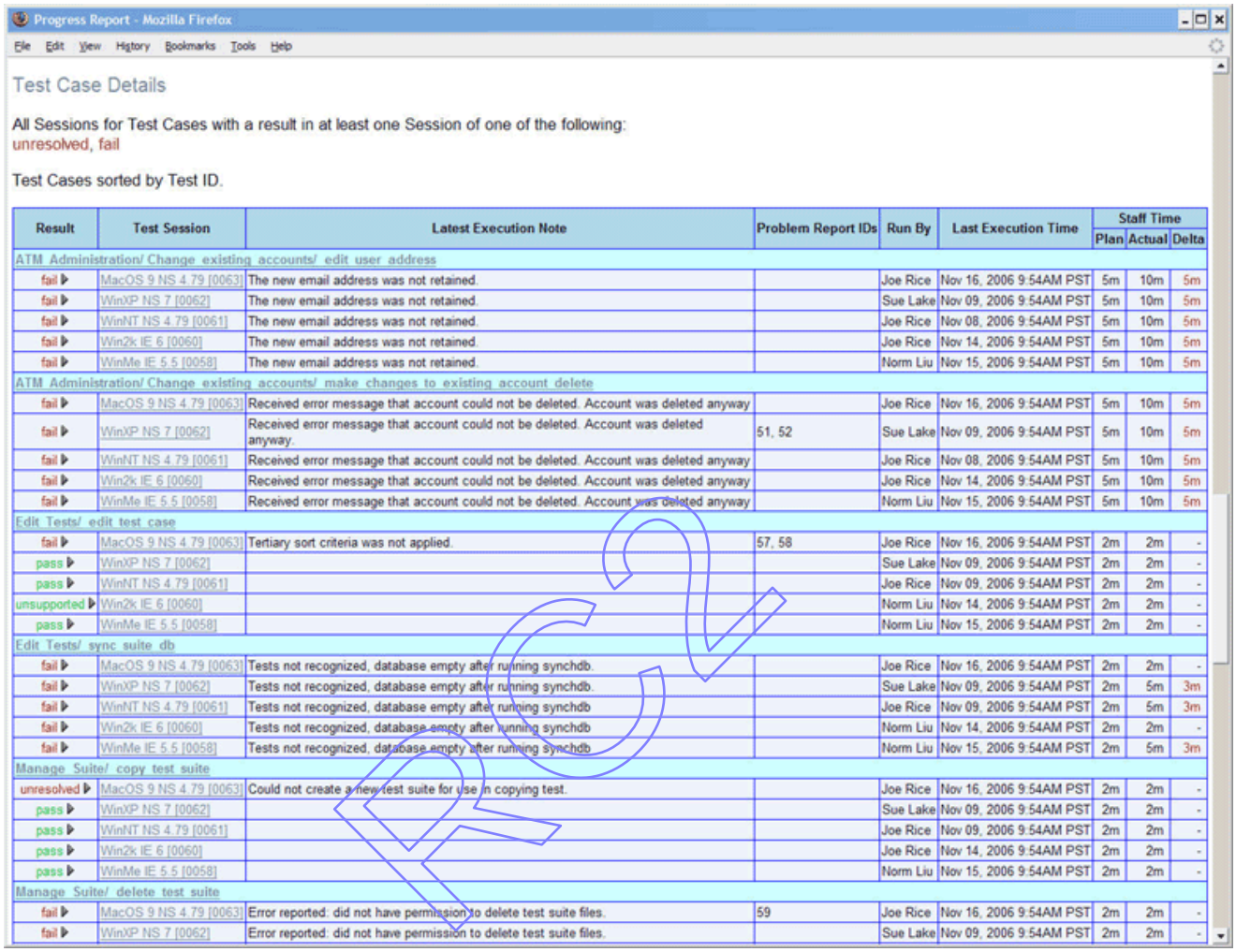
- What fields should be shown in the Test Case details table:
  - The Test Case result and a link to a detailed report on the Test Session are always shown.
  - Any special Session Field may be shown. These include predefined Fields such as who the Test Case is assigned to (see Section 1.10.8 of the ApTest Manager Admin Guide for details). Time related fields may be shown if time tracking is enabled for them in this Test Suite.
  - Any Execution Fields may also be shown.
  - If either staff or clock based time tracking is enabled a synthesized field called Planned/Actual/Delta may be shown. This field contains three columns for clock and/or staff time, depending on what time tracking is enabled: the planned and actual execution time and the delta between them

5.6.2 Including files in Progress Reports

Progress reports include within the report the contents of two special files, if the files are present in the Test Case tree for the Test Suite. These may be used to provide information such as overview material, signature blocks, or instructions related to the report.

FILE	PLACEMENT IN REPORT
description-progress.html	Top of report, below report header
description1-progress.html	Before Test Case Details section

These files must contain information formatted with HTML, which may be produced with any HTML editing tool. In order to be included in reports they must be uploaded into the top level folder of the Test Case tree for a Test Suite.



Progress Report - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Test Case Details

All Sessions for Test Cases with a result in at least one Session of one of the following:
unresolved, fail

Test Cases sorted by Test ID.

Result	Test Session	Latest Execution Note	Problem Report IDs	Run By	Last Execution Time	Staff Time		
						Plan	Actual	Delta
ATM Administration/ Change existing accounts/ edit user address								
fail	MacOS 9 NS 4.79 [0063]	The new email address was not retained.		Joe Rice	Nov 16, 2006 9:54AM PST	5m	10m	5m
fail	WinXP NS 7 [0062]	The new email address was not retained.		Sue Lake	Nov 09, 2006 9:54AM PST	5m	10m	5m
fail	WinNT NS 4.79 [0061]	The new email address was not retained.		Joe Rice	Nov 08, 2006 9:54AM PST	5m	10m	5m
fail	Win2k IE 6 [0060]	The new email address was not retained.		Joe Rice	Nov 14, 2006 9:54AM PST	5m	10m	5m
fail	WinMe IE 5.5 [0058]	The new email address was not retained.		Norm Liu	Nov 15, 2006 9:54AM PST	5m	10m	5m
ATM Administration/ Change existing accounts/ make changes to existing account delete								
fail	MacOS 9 NS 4.79 [0063]	Received error message that account could not be deleted. Account was deleted anyway		Joe Rice	Nov 16, 2006 9:54AM PST	5m	10m	5m
fail	WinXP NS 7 [0062]	Received error message that account could not be deleted. Account was deleted anyway.	51, 52	Sue Lake	Nov 09, 2006 9:54AM PST	5m	10m	5m
fail	WinNT NS 4.79 [0061]	Received error message that account could not be deleted. Account was deleted anyway		Joe Rice	Nov 08, 2006 9:54AM PST	5m	10m	5m
fail	Win2k IE 6 [0060]	Received error message that account could not be deleted. Account was deleted anyway		Joe Rice	Nov 14, 2006 9:54AM PST	5m	10m	5m
fail	WinMe IE 5.5 [0058]	Received error message that account could not be deleted. Account was deleted anyway		Norm Liu	Nov 15, 2006 9:54AM PST	5m	10m	5m
Edit Tests/ edit test case								
fail	MacOS 9 NS 4.79 [0063]	Tertiary sort criteria was not applied.	57, 58	Joe Rice	Nov 16, 2006 9:54AM PST	2m	2m	-
pass	WinXP NS 7 [0062]			Sue Lake	Nov 09, 2006 9:54AM PST	2m	2m	-
pass	WinNT NS 4.79 [0061]			Joe Rice	Nov 09, 2006 9:54AM PST	2m	2m	-
unsupported	Win2k IE 6 [0060]			Norm Liu	Nov 14, 2006 9:54AM PST	2m	2m	-
pass	WinMe IE 5.5 [0058]			Norm Liu	Nov 15, 2006 9:54AM PST	2m	2m	-
Edit Tests/ sync suite db								
fail	MacOS 9 NS 4.79 [0063]	Tests not recognized, database empty after running synchdb.		Joe Rice	Nov 16, 2006 9:54AM PST	2m	2m	-
fail	WinXP NS 7 [0062]	Tests not recognized, database empty after running synchdb.		Sue Lake	Nov 09, 2006 9:54AM PST	2m	5m	3m
fail	WinNT NS 4.79 [0061]	Tests not recognized, database empty after running synchdb		Joe Rice	Nov 09, 2006 9:54AM PST	2m	5m	3m
fail	Win2k IE 6 [0060]	Tests not recognized, database empty after running synchdb		Norm Liu	Nov 14, 2006 9:54AM PST	2m	2m	-
fail	WinMe IE 5.5 [0058]	Tests not recognized, database empty after running synchdb		Norm Liu	Nov 15, 2006 9:54AM PST	2m	5m	3m
Manage Suite/ copy test suite								
unresolved	MacOS 9 NS 4.79 [0063]	Could not create a new test suite for use in copying test.		Joe Rice	Nov 16, 2006 9:54AM PST	2m	2m	-
pass	WinXP NS 7 [0062]			Sue Lake	Nov 09, 2006 9:54AM PST	2m	2m	-
pass	WinNT NS 4.79 [0061]			Joe Rice	Nov 09, 2006 9:54AM PST	2m	2m	-
pass	Win2k IE 6 [0060]			Joe Rice	Nov 14, 2006 9:54AM PST	2m	2m	-
pass	WinMe IE 5.5 [0058]			Norm Liu	Nov 15, 2006 9:54AM PST	2m	2m	-
Manage Suite/ delete test suite								
fail	MacOS 9 NS 4.79 [0063]	Error reported: did not have permission to delete test suite files.	59	Joe Rice	Nov 16, 2006 9:54AM PST	2m	2m	-
fail	WinXP NS 7 [0062]	Error reported: did not have permission to delete test suite files.		Sue Lake	Nov 09, 2006 9:54AM PST	2m	2m	-

Figure 21 - Progress Report – Result Details

5.7 Users Report

The Users Report reports the work performed on a project by one or more users for a test project composed of one or more Test Sessions. If all of a project's Sessions are included the report shows the use productivity for the whole project. A report can also apply to any portion of a project's Test Sessions.

The report shows users' work by Session, result type, and date.

As well, if time tracking is enabled the planned and actual execution time for the Test Cases executed by the users is shown along with the variance between planned and actual schedules.

This report also shows the users that have been assigned to tests, both total assignments per user by Session and per Test Case assignments by Session. The assignment tables also link to reports

for the Test Cases and Test Sessions it is reporting on, allowing easy access to more detailed information on specific tests.

- Click a Test Session name in the `Per Session User Assignment table` or the `Per Test Case User Assignment` table to see a complete Templated report for that Session.
- Click a Test Case name in the `Per Test Case User Assignment` table to View a particular Test Case.
- Click a gray triangle in the `Per Test Case User Assignment` table to see a Templated report for a particular Test Case in a particular Test Session.

5.7.1 Customizing the Users Report

Using the Customize Report screen a Users Report can be customized in various ways, such as:

- What users to report on.
- What time period to report on.

  If All Dates is selected the report covers the period from the earliest date that Test Cases were executed to the latest date that Test Cases were executed, for the specified Sessions.

  If a fixed time period is selected the report covers that may days from the date the report is generated.

  If a range of dates is specified the report covers that date range.

  A report that covers 30 days or less shows information for each day in the period covered.

  A report that covers more than 30 days shows information for each week in the period.
- If graphs are to be included.

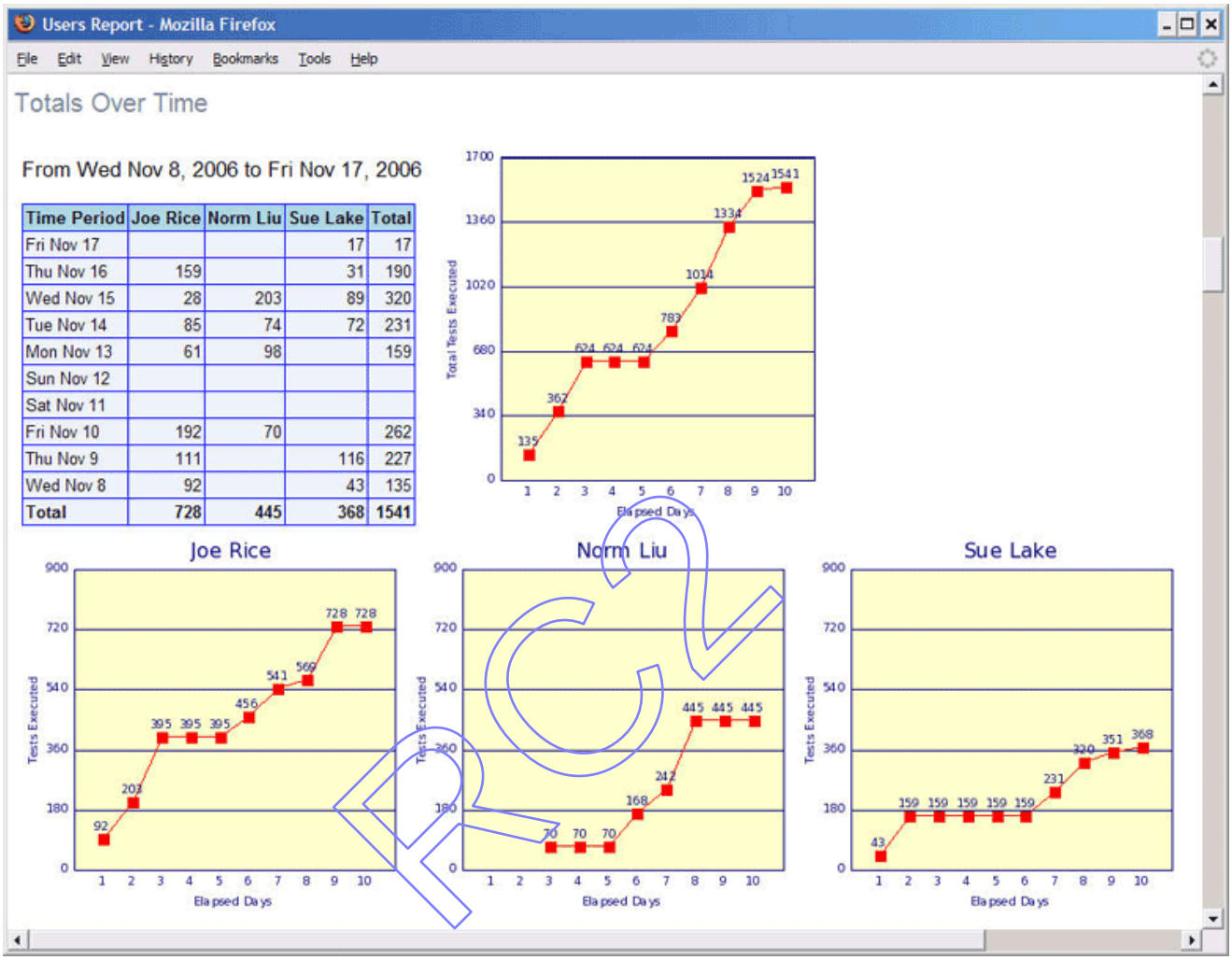
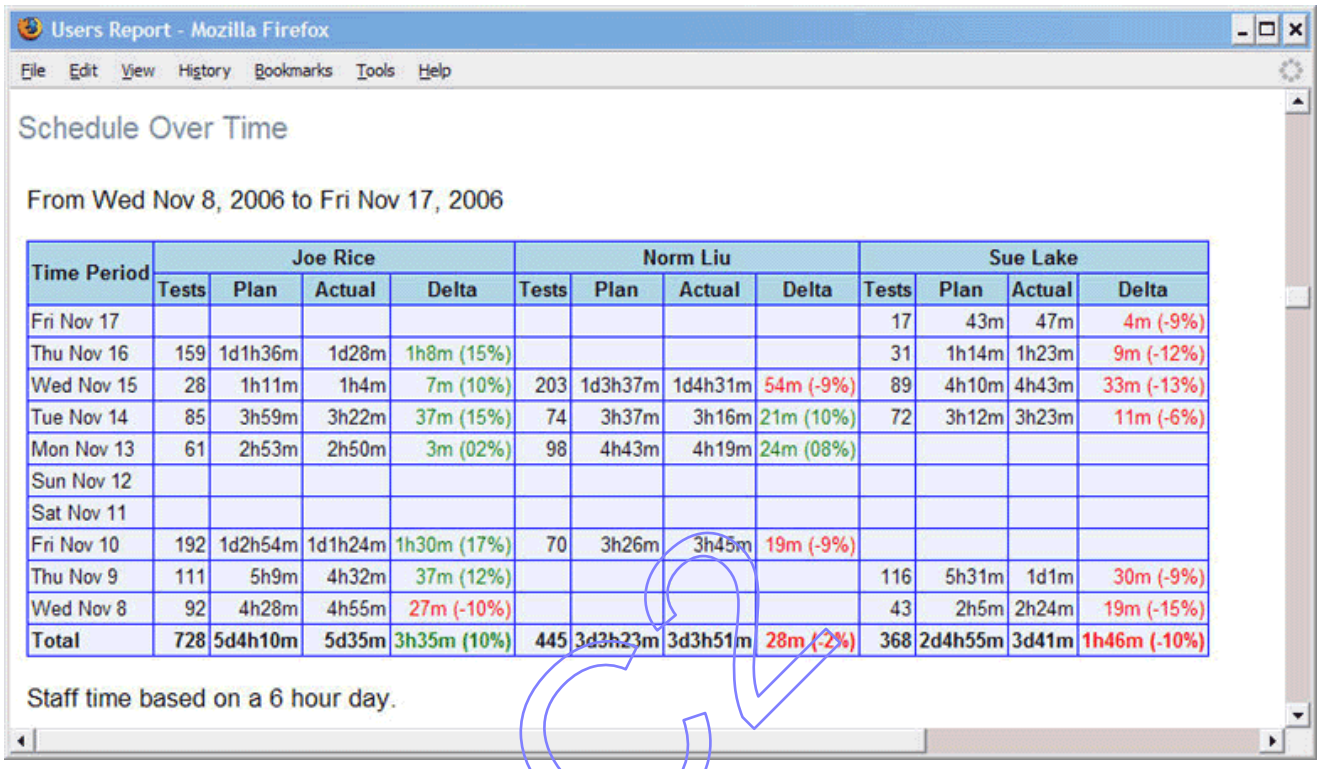


Figure 22 - Users Report



Time Period	Joe Rice				Norm Liu				Sue Lake			
	Tests	Plan	Actual	Delta	Tests	Plan	Actual	Delta	Tests	Plan	Actual	Delta
Fri Nov 17									17	43m	47m	4m (-9%)
Thu Nov 16	159	1d1h36m	1d28m	1h8m (15%)					31	1h14m	1h23m	9m (-12%)
Wed Nov 15	28	1h11m	1h4m	7m (10%)	203	1d3h37m	1d4h31m	54m (-9%)	89	4h10m	4h43m	33m (-13%)
Tue Nov 14	85	3h59m	3h22m	37m (15%)	74	3h37m	3h16m	21m (10%)	72	3h12m	3h23m	11m (-6%)
Mon Nov 13	61	2h53m	2h50m	3m (02%)	98	4h43m	4h19m	24m (08%)				
Sun Nov 12												
Sat Nov 11												
Fri Nov 10	192	1d2h54m	1d1h24m	1h30m (17%)	70	3h26m	3h45m	19m (-9%)				
Thu Nov 9	111	5h9m	4h32m	37m (12%)					116	5h31m	1d1m	30m (-9%)
Wed Nov 8	92	4h28m	4h55m	27m (-10%)					43	2h5m	2h24m	19m (-15%)
Total	**728**	**5d4h10m**	**5d35m**	**3h35m (10%)**	**445**	**3d3h23m**	**3d3h51m**	**28m (-2%)**	**368**	**2d4h55m**	**3d41m**	**1h46m (-10%)**

Figure 23 - Users Report – Result Details

5.8 Coverage Report

The Coverage Report shows the extent to which a group of Test Sessions has covered a group of Test Cases (those contained in the entire Test Suite or one or more Test Sets). The number of times each Test Case is has been executed in these Test Sessions is shown along with a color coded representation of their results in each Session. Click a colored square to see a Templated report for a particular Test Case in a particular Session.

A white result for a Session indicates a Test Case is not contained in that Test Session. If a Coverage Report is run on one or more Sessions from one or more Sets, tests that have an entire row of white squares are not contained in any of the Sessions and hence are not contained in any of the Sets.

Hover the mouse over a Session number to see its name.

The Coverage Report can also show the extent to which Test Cases have been executed in Test Sessions with the values of a particular Session Variable. The number of times a Test Case has been executed for each Session Variable value is shown along with a color coded representation of the execution results. If the same result was achieved in all Test Sessions, a square of the color configured for that result is shown. If different results were achieved a yellow square is shown.

Hover the mouse over a square to see the results by Session for a specific Session Variable value for a Test Case.

5.8.1 Creating Coverage Test Sets

Click **Create Set** to create a Test Set of Test Cases from the Coverage Report based on how many times they have been executed. For example just Test Cases that have never been executed or only those which have been executed already. This can be useful to run tests to fill in gaps in test coverage, or to produce reports on just those tests which have been run as part of the test campaign to date. Note these Sets and Test Sessions derived from them revert to selecting all Test Cases in the current Test Suite if they are refreshed.

Create Set can also factor Test Case results into the Set it creates. Set contents can be limited to Test Cases with specific results in any or every Session in the Coverage Report.

5.8.2 Customizing the Coverage Report

Using the Customize Report screen a Coverage Report can be customized in various ways, such as:

- Whether to just show Test Cases that have no executions. This creates a list of the Test Cases not included in any of the Sets for the selected Sessions.
- Whether to report on coverage for the entire Test Suite, or for one or more Test Sets.
- How to sort the results.
- Whether to count the Sessions that include a Test Case or just those in which it has been run.
- Whether to show coverage by result or by the values of a Session Variable (for Variables of type single or multi-select menu which are not hidden).

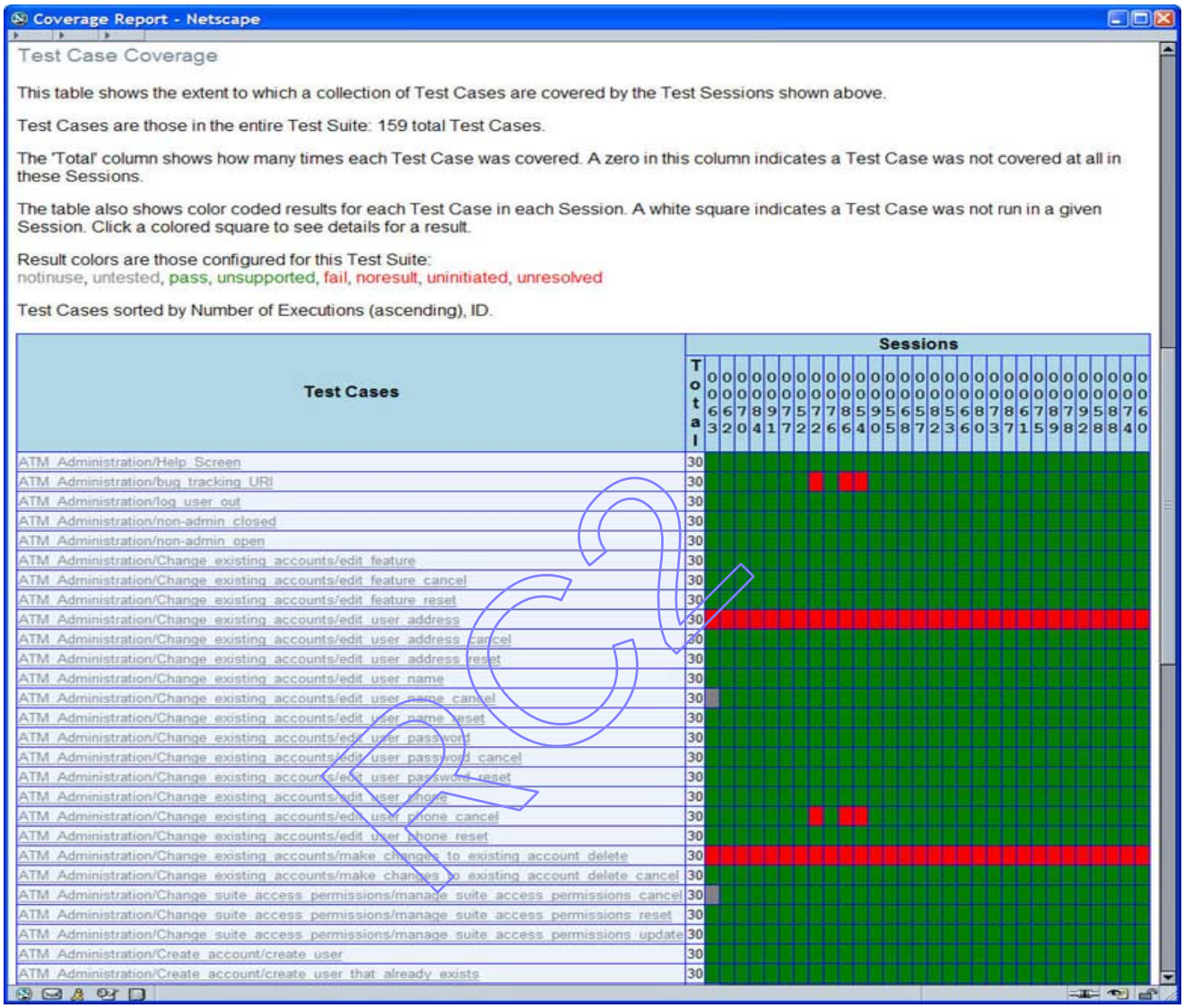


Figure 24 - Coverage Report

5.9 Schedule Report

The Schedule Report shows the schedule status for a group of Test Sessions. The report consists of a number of tables:

- Report Summary - Shows the number of Sessions which started and ended early, late, and on time, as well as the number for which a start or end date is defined but the start or end of execution has not yet occurred ('Pending'). The number of Sessions for which a start or end date has not been defined are shown as 'Not Set'.

- Schedule Summary - Shows the number of Sessions in the report with planned schedules at different times. Sessions are shown as scheduled from their planned start date until the end of their planned end date window.
- Session Summary - Shows a colored icon for the start and end date status for each Session.
    - A blue ball for starting or ending early.
    - A green ball for starting or ending on time.
    - A red ball for starting or ending late.
    - A yellow ball if a start or end date is defined but the start or end of execution has not yet occurred.
    - A red triangle if a start or end date is defined but the start or end of execution has not yet occurred and the window for the on-time start or completion of execution has expired.

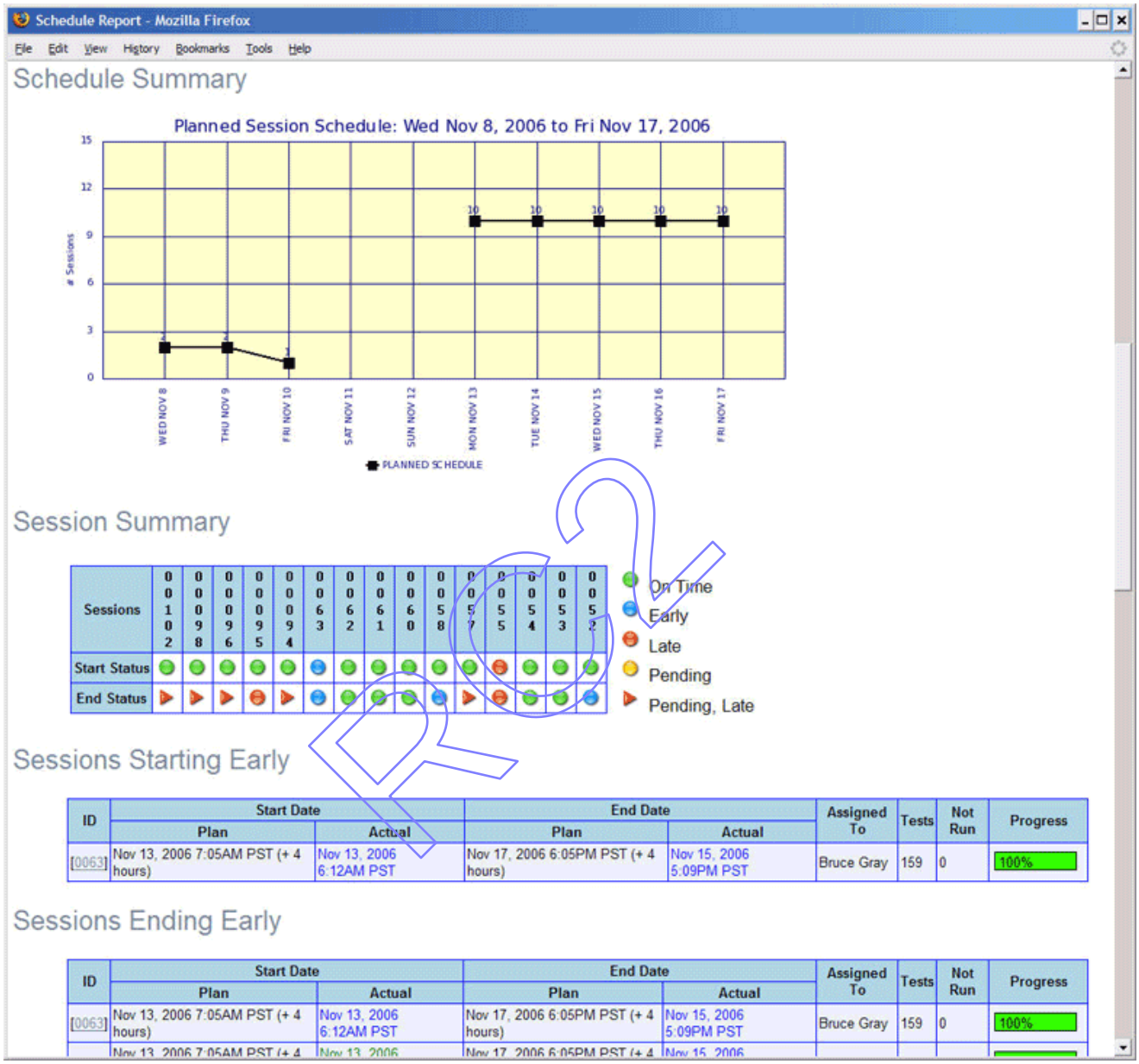
  If a start or end date is not defined the Session no icon is displayed for the start or end of execution.

  Hover the mouse over an icon to see what it indicates and over a Session number to see its name. Click an icon to see more detailed information on a Session.
- Tables showing the Sessions which started early, on time, or late and ended early, on time, or late.
- Tables showing Sessions with start and end date defined for which a start or end date is defined but the start or end of execution has not yet occurred.

5.9.1 Customizing the Schedule Report

Using the Customize Report screen a Schedule Report can be customized in various ways, such as:

- Whether the display of the report header, its Session list, or the Session variables in the Session list should be suppressed.
- If any of the other Schedule Report tables should be suppressed.
- What information should be displayed in the Session information tables and the order in which to display it



ID	Start Date		End Date		Assigned To	Tests	Not Run	Progress
	Plan	Actual	Plan	Actual				
[0063]	Nov 13, 2006 7:05AM PST (+ 4 hours)	Nov 13, 2006 6:12AM PST	Nov 17, 2006 6:05PM PST (+ 4 hours)	Nov 15, 2006 5:09PM PST	Bruce Gray	159	0	100%

ID	Start Date		End Date		Assigned To	Tests	Not Run	Progress
	Plan	Actual	Plan	Actual				
[0063]	Nov 13, 2006 7:05AM PST (+ 4 hours)	Nov 13, 2006 6:12AM PST	Nov 17, 2006 6:05PM PST (+ 4 hours)	Nov 15, 2006 5:09PM PST	Bruce Gray	159	0	100%

Figure 25 - Schedule Report

Chapter

6

6 Usage Scenarios

Examples of how ApTest Manager can be used to solve different sorts of problems. ApTest Manager can be used in a myriad of different QA projects and processes. Here are a few best practice recommendations for commonly encountered requirements.

6.1.1 Testing different versions of a product

A Test Suite for a group of projects for different versions of a product normally includes:

- A Product Versions Test Case Field – a multi-select menu containing the numbers of the product versions, e.g. 5.0, 6.0, 7.0.
- Test Cases, each with values selected from the Product Versions Field for one or more versions, indicating the version(s) of the product the Test Case applies to. New versions may have new tests added for them (for new features or enhanced test coverage). These tests often then apply to subsequent versions as well.
- Test Sets that select the Test Cases for a version of the product. This selection can be combined with other selections, e.g. a Test Set for smoke tests for Version 5.0 or a Set for high priority installation tests for Version 6.0.

  It is common to include the version number in the Folder structure for the Sets for testing a given release, so it appears in the Set name along with the Set's purpose, e.g. V5.0/Test Cycles/Smoke Tests.
- Test Sessions for these Test Sets to contain results from running the tests in the Set on different test platforms.

  Test Sessions have numbers that uniquely identify them, so their names do not need to be unique. Session names often note important information about the test environment indicated by their Session Variables. E.g. you can have two different Sessions named Windows XP IE7, one for the V6.0/Smoke Tests Set and one for the V6.1/Smoke Tests Set.

This is how the ApTest Manager sample Test Suite is configured.

6.1.2 Testing a new release, reusing the test project from a previous release

There are a few simple steps needed to quickly extend the configuration above to test a new version. This procedure provides a project configuration for testing a new release that offers maximal reuse of materials from testing the previous release. The Test Cases and results from previous releases are retained so they can be compared to the results for the new release.

This is something that would need to be done just once when a new version is put into testing:

1. Add to the Product Versions Test Case Field an entry for the new version, using the Test Case Field editor. If versions 1.0 and 2.0 were previously tested and version 3.0 is being added for example, extend the list of values for this Field from "1.0, 2.0" to "1.0, 2.0, 3.0".

2. Existing tests generally apply to a new release. So, the new version needs to be added to the Product Versions these tests apply to. Use the Search/Replace feature to do this. For example, if the values selected in the Product Versions Field for existing Test Cases contains version 2.0, to make them also apply to Version 3.0: search that Field for “2.0” and replace it with “3.0, 2.0”.

   If there are new tests for the new release add them to the Test Suite, selecting the new release (e.g. 3.0) as the Product Version they apply to.

3. Click the **Copy Folder** icon for a Folder containing Sets used in testing a previous version to copy and reuse them in testing the new version. If the Folder for the previous version was named 3.0, for example, it might be copied to a new Folder named 4.0 for the new release. Select the "Copy and clear test sessions" option for the copy operation. This retains the Test Set/Sessions for the previous version of the product while creating new empty ones for testing the new version.

   Test Sessions have numbers and when they are copied the new copies are given new numbers. So, there are 10 Sessions for a Set and when the Set and its Sessions are copied 10 new Sessions are automatically created that are identified by new numbers. Session names do not need to be unique thus the copies can have the same names as the originals.

4. Click the **Change Folder Sets** icon for the new Folder. Select the new version as the value for the Product Versions Field in the Test Case Selectors section. This causes the new Test Sets to include all the Test Cases for the new release. Click the Change values and Refresh Set button to update the tests in the Sets to match the new Test Case Selectors. Select the option for refreshing Sessions in this Set to update their tests as well.

The end result of this process is a collection of Test Cases, old and new, applicable to testing the new release and a copy of the Sets and Sessions used in testing the previous release, ready for test execution.

Additional Test Sets or Test Sessions to be used in testing the new release can be created as well.

6.1.3 Testing different drops

ApTest Manager can be used to handle new drops in a variety of ways: ranging from restarting the test cycle with each new drop to continuing from where the testing of the last drop left off.

- A new drop can be handled just like a new release, by following the procedure above and creating new Test Sets and Test Sessions for it. This allows different sets of tests to be applied to each drop.
- Different Test Sessions can be used for a drop, with a Test Session Variable employed to indicate the drop a Test Session applies to. This approach can be used when the same Test Cases/Test Sets are used for different drops (it requires less project administration than using different Test Sets). With this approach the results of testing different drops can be compared for regression analysis. The Change Session Values bulk operation can be used to change the Session Variable value when a new drop is received.

  This is how the ApTest Manager sample Test Suite is configured.
- The same Test Sessions can be used for testing as new drops are made available. An Execution Field can be used to have the tester specify which drop was tested for each Test Case in each Session. Tests from previous drops can be rerun all or in part (see the following section for details). This entails minimal project administration when new drops are received, but requires testers to enter more information during test execution.

6.1.4 Assigning priorities to tests within sessions

In some testing processes Test Case priority varies by test environment and so needs to be assigned on a per Test Session basis. To do this the Assign Session screen is used to set the priority values for different tests.

An Execution Field is configured to hold the priority of each test in a Session. This would be a single-select menu field marked settable, so it can be set with Assign Session, and read only, so the priority for each test is displayed to the user but cannot be edited. This field would be added to the template for Test Case execution when it is defined.

The standard capabilities of Assign Session can then be used to select groups of tests and assign them different priority values.

6.1.5 Working with multi-step tests

ApTest Manager tests may contain a Test Procedure Field, with the steps a tester follows to execute it along with a Verification Field, with what the tester needs to verify after the Test Procedure is completed to determine if the test passed.

ApTest Manager example Test Suite Profiles with Multi-step test procedures offer an alternate Test Suite layout - configured with a table of Test Procedure and Verification steps. Select one of these Profiles when created a new Test Suite and its configuration includes such a table for each Test Case. This table lets the test author specify the tester should check for expected behavior at different points within the Test Procedure. The tester can then set the overall result of a Test Case based on the results of different steps when executing the Test Case.

An unlimited number of steps may be defined for each Test Case. Each step is automatically numbered when the Test Case is displayed.

The table field may be extended by configuring additional columns, allowing additional information to be associated with each step. For example, whether a problem with a step is to be considered critical, and result in the failure of the test as a whole, or minor and allow the test execution to proceed.

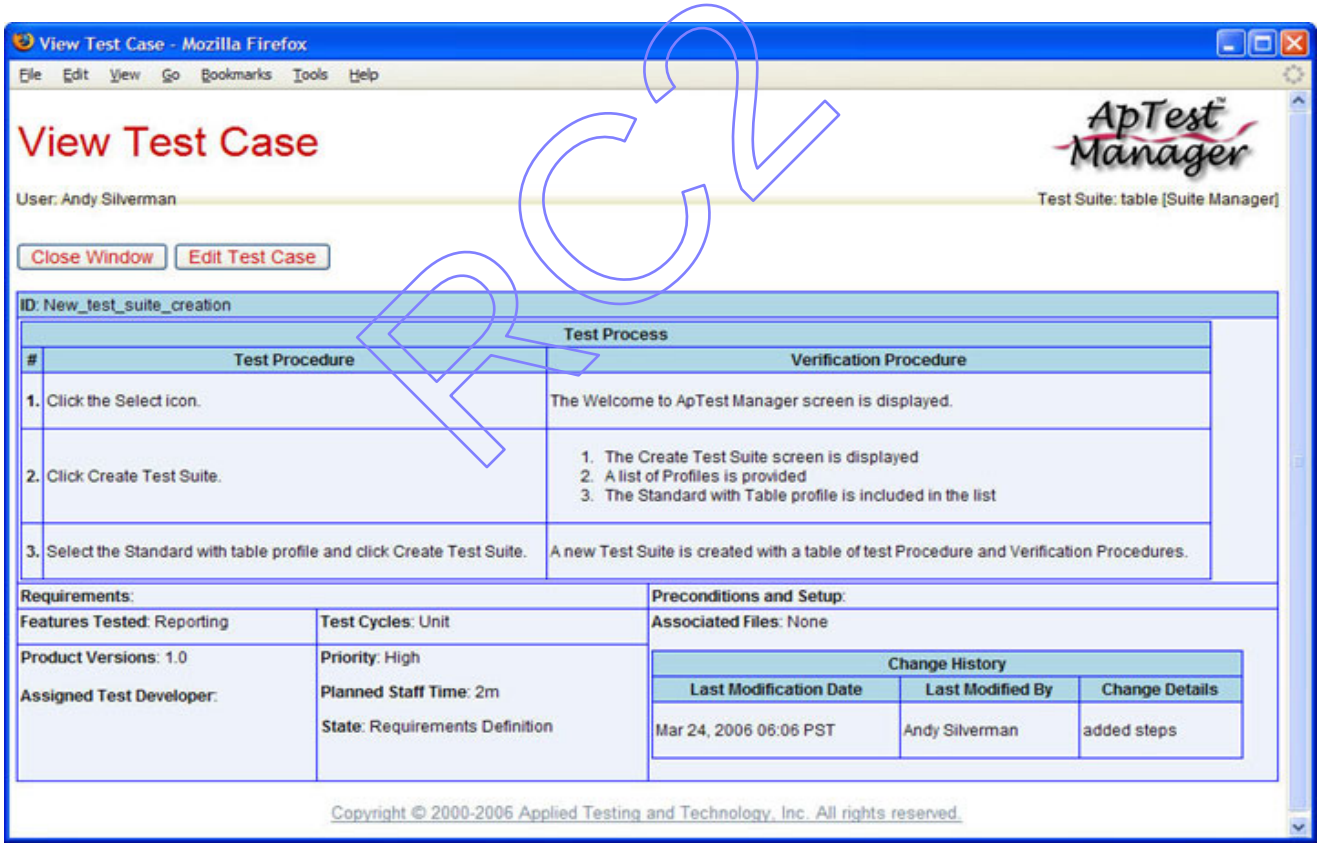


Figure 26 - Example multi-step test

6.1.6 Fixing bugs and retesting fixes

A QA group is testing a new release and a development team is tasked with fixing the PRs the testers file. What is a good way to coordinate the activities of the two groups to ensure fixes get verified when new drops are delivered to QA?

The key to this solution is configuring a custom result code “Needs QA retest” using the Manage result codes link from the Manage Test Suite area. This allows product developers to flag the Test Cases that need to be rerun against an impending drop to verify bugs reported by QA have been fixed by development. Thus information can be passed back and forth between QA and development, mediated by ApTest Manager.

In this model testers use ApTest Manager to enter each PR into the bug tracking system. Development then goes through the bug list and fixes the reported problems.

A link to the ApTest Manager run page is included (automatically) in the information ApTest Manager submits when a bug is created.

When a bug is fixed the developer clicks this link to bring up the ApTest Manager run page for the Test Case that detected the problem. The developer can a) rerun the test to verify the fix and b) change the test result to “Needs QA retest” (and optionally add a comment about the fix). As ApTest Manager keeps a running history of every time a test is run this would record the new result along with the developer who made the fix and their comment, which is nice information for QA to have.

When QA gets a new drop with fixes they tell ApTest Manager to rerun just the tests with the "Needs QA retest" result so they can verify the fixes and change the results of those tests that now pass to ‘pass’ (additional testing of the drop can performed as desired)

As the tester filing a PR puts a link to the bug tracking system into ApTest Manager when they file it (in the Problem report Links Field), the QA person verifying the fix can also invoke the bug tracking system to resolve the bug there as well.

The ApTest Manager sample Test Suite has most of this already set up - all that would need to be done is add the “Needs QA retest” result code to the configuration.

6.1.7 Digitally signing reports

A digitally signed ApTest Manager report can be created by printing it to a PDF file with Adobe® Acrobat®. Acrobat 4.0 and later includes digital signature functionality, which is provided by an Adobe-supplied signature framework and signing method plug-ins from Adobe and third-party vendors. Digital signature functionality for Acrobat meets the standards for digital signatures as defined in the Code of Federal Regulations 21 (called "CFR 21"), Part 11. Y. See http://www.adobe.com/support/techdocs/323231.html.

6.1.8 Sending Test Case information for review

There are a number of ways to send Test Case requirements, specifications, or results for review and approval.

The first step is producing an ApTest Manager report.

A standard report may be used. Or, if desired, a customized report can be used for this task by designing a custom report template; defining the fields to show for each test and how they are presented.

The Requirements or Test Cases included in the report can be selected from the Customize Report screen - for example sending just the requirements/tests for a specific feature for review while continuing development in other areas.

How to distribute the report for review depends on how reviewer comments will be submitted (e.g. edit the report, edit the tests themselves, send an email or document with comments, etc.). Options include:

1. Email a link to the report's web page to the reviewers. Reviewers can provide their comments via email or a separate document.

2. If the type of report supports it, produce the report as a CSV file, save it from Excel, and send the resulting Excel Worksheet to the reviewers. Reviewers can provide their comments by editing the Excel spreadsheet.

3. Save the report as a "Web Page, complete" from the web browser and email a link to the report's web page to the reviewers. Reviewers can provide their comments via email or a separate document.

4. Save the report as a "Web Page, complete" from the web browser, open the saved file with Microsoft Word, and send the Word file to the Reviewers. Reviewers can provide their comments by editing the Word document and Word's Track Changes and Compare and Merge Document features can be used to manage collaboration among reviewers.

5. Print the report to PDF and send the PDF file to reviewers. Reviewers can provide their comments by editing the PDF file. Adobe Acrobat®. Acrobat 7.0 Professional creates PDF files with extensive reviewing support and enables "anyone using free Acrobat Reader 7.0 software to actively participate in reviews". Other open source and commercial "editable PDF" tools are available.

6. Reviewers can edit the Test Case in ApTest Manager themselves; though this runs the risk that one reviewer may undo the work of another. Reviewers need an ApTest Manager account and consume an ApTest Manager seat license while modifying Test Cases.

A State Field for tracking one or more review cycles may be configured for Test Cases to track where each Test Case is in the review and approval process. This status can be updated by editing a Test Case or by using the Search and Replace feature to update Test Cases in bulk.

6.1.9 Paramaterizing Test Cases with Session Variables

Normally static, Test Cases can be parameterized with Session Variables to show different information to testers in different Sessions. In addition to the Session Variables displayed in ApTest Manager and its reports to specify test environments, Session Variables maybe specified as 'hidden'. Hidden Session Variables are not displayed for a Test Session. They, as well as Session Variables that are not hidden and some predefined Variables, can all be used in Test Case customization.

A Session Variable reference can be inserted into a textarea field of style wysiwyg by selecting it from the editor's "Session Variables" pull down menu.

As well, the Session Variables that are configured for a Test Suite are available from the Edit Tests screen via the Session variables button in the left frame. A Session Variable reference can be cut from this display and pasted into a Test Case field when editing the Test Case.

When the Test Case is executed or included in a report for a Test Session the Variable are expanded into its value for that Session. Session Variables are not expanded in reports on a Test Suite (i.e. from the Edit Tests screen).

For example, to specify different text strings to be displayed in Test Cases in each Test Session:

- Define a hidden session variable of type text.
- When creating a Test Session specify the value to be used for that Variable for that Session.
- When creating Test Cases put a references to the Session Variable at the spot where the string should be inserted.

When editing or viewing the Test Cases the Variable reference is shown but when a Test Session is executed the Variable value for that Session is substituted.

As many Session Variable as desired can be configured and used to parameterize Test Cases.

Dependent Session Variables can also be useful in parameterizing Test Cases. For example, if there are several Variables that will have different values for different customers, they can be dependent on a single Session Variable for 'customer'. When a Session is created selecting a customer from this Variable will cause the values for that customer to be displayed for each of the dependent variables. The customer variable could be not hidden if desired, so it would be displayed in reports and screens to describe the Session. The dependent variables could be hidden, and used solely to parameterize Test Cases. Examples are show in Figure 27 though Figure 30.

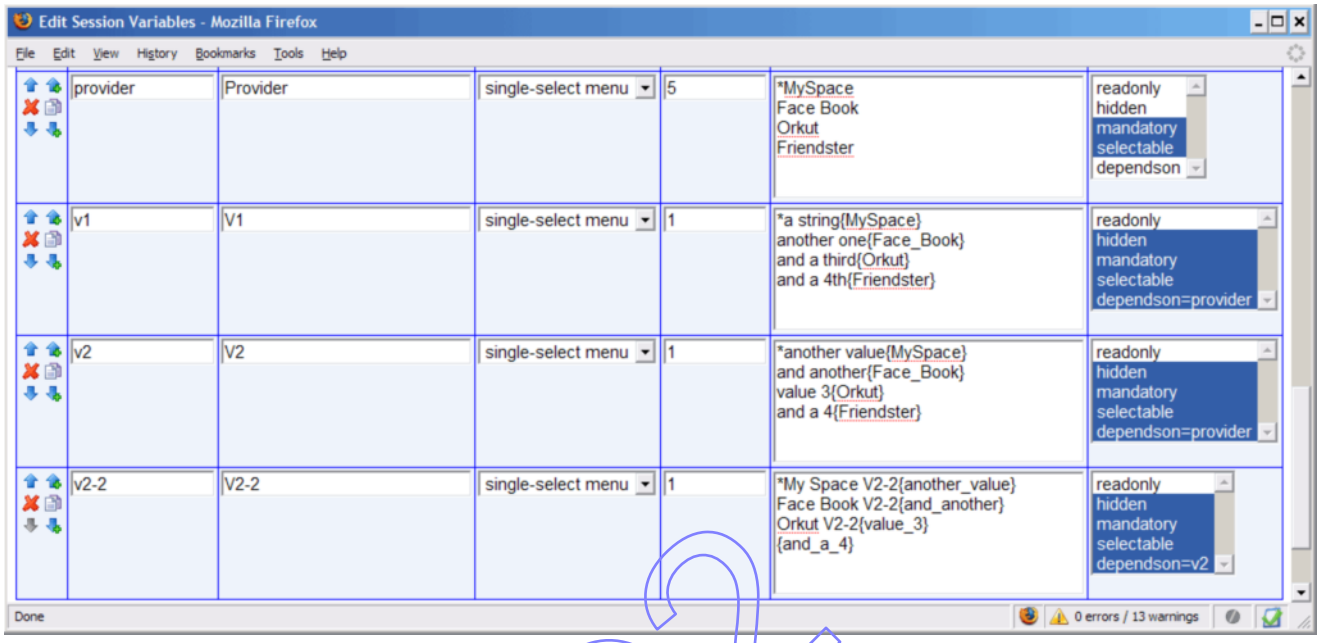


Figure 27 - Parameterization Session Variables

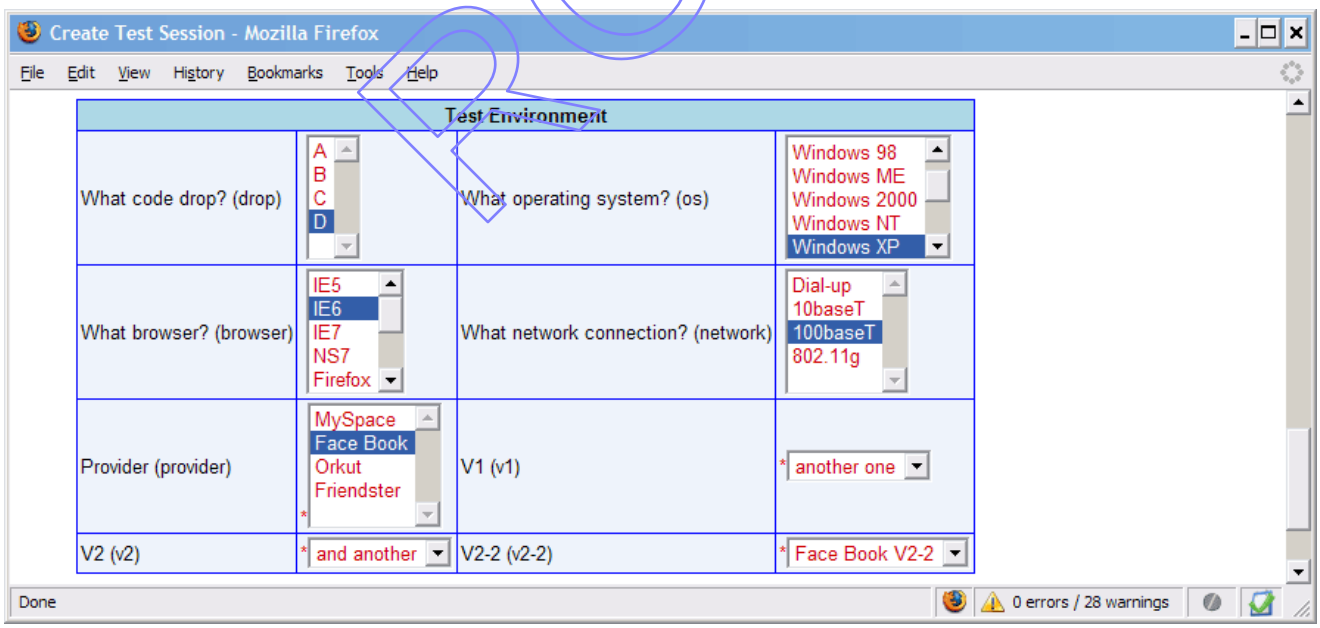


Figure 28 - Session Variable Selections

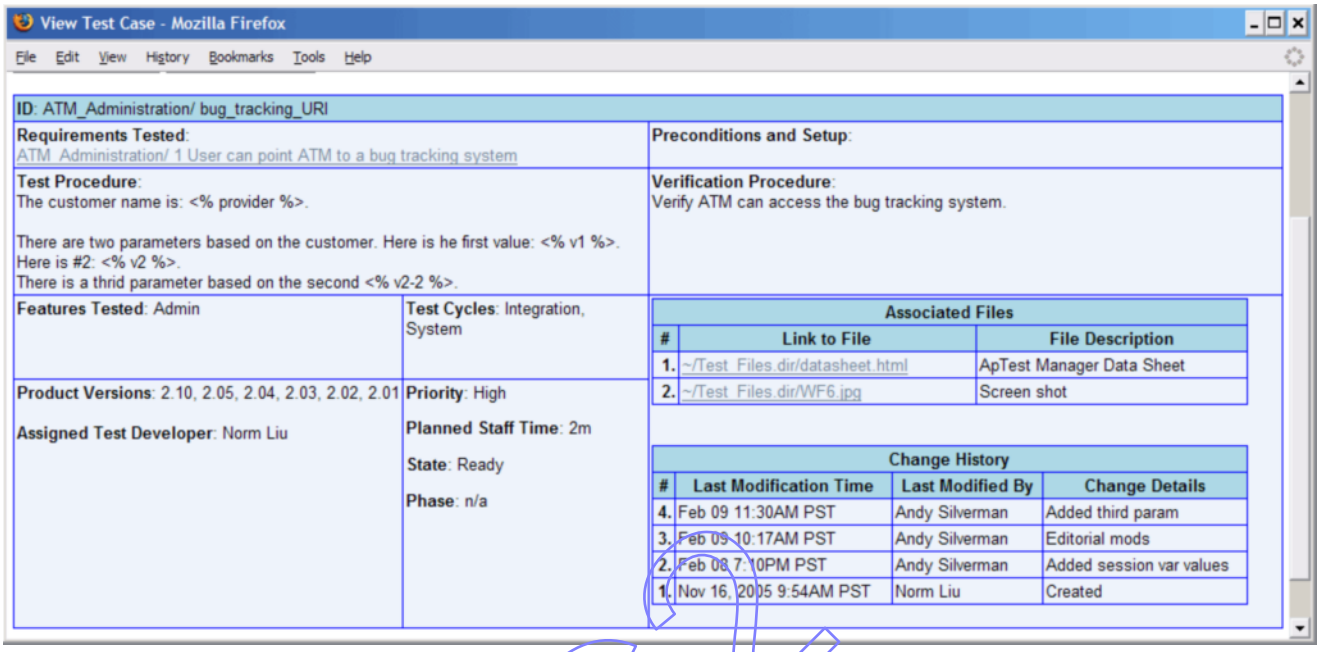


Figure 29 - Paramaterized Test Case

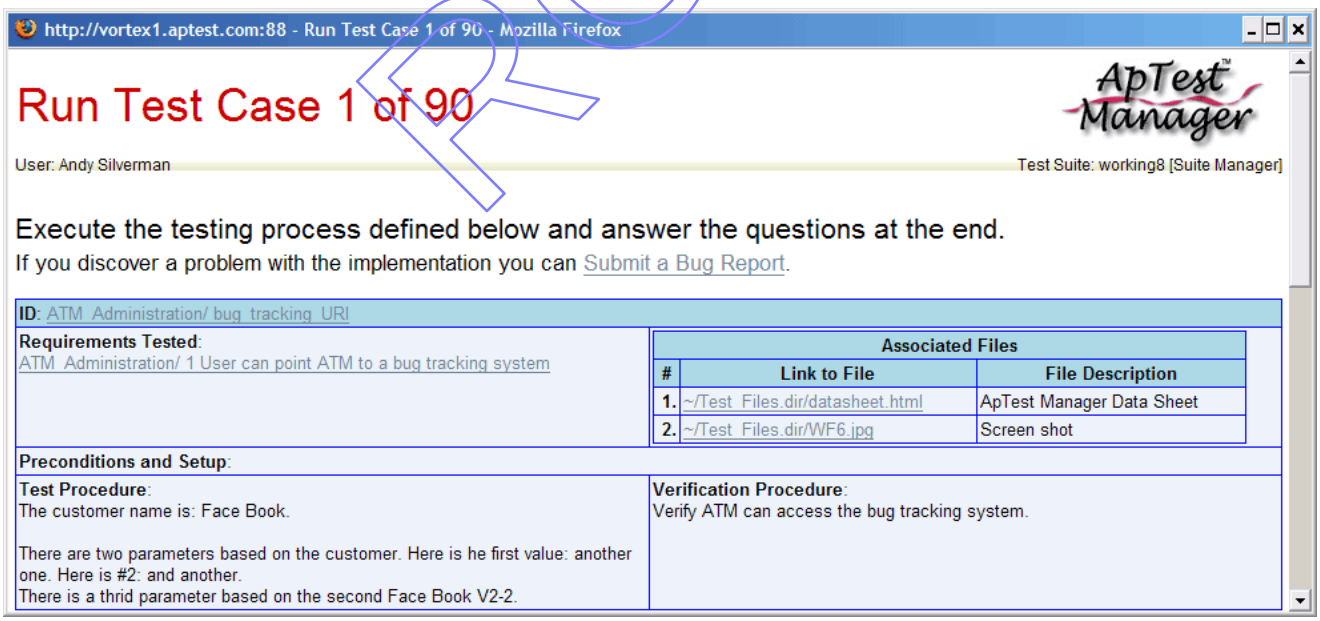


Figure 30 - Parameter Expansion