Novell Nsure™ SecureLogin

3.51.1

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SCRIPTING GUIDE

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Nsure SecureLogin 3.51.1 Scripting Guide
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Online Documentation: To access the online documentation for this and other Novell products, and to get updates, see www.novell.com/documentation.

Contents

About This Guide

The *SecureLogin Scripting Guide* is for network administrators. The following sections provide information on scripting:

Additional Documentation

This *Guide* is part of a documentation set for SecureLogin 3.51.1. Other documents include the following:

- The Help systems in SecureLogin on the desktop as well as SecureLogin snap-ins to ConsoleOne® or Microsoft* Management Console.
- The Nsure SecureLogin 3.51.1 Installation Guide (installing SecureLogin, migrating secrets from earlier versions, and configuring Secure Workstation)
- The Nsure SecureLogin 3.51.1 Administration Guide (tools and tasks to manage SecureLogin and configure terminal emulators)
- The Nsure SecureLogin 3.51.1 Terminal Services Guide (configuring Citrix servers)
- The Nsure SecureLogin 3.51.1 Configuration Guide for Terminal Emulation (how to configure Terminal Launcher for selected terminal emulators)
- The Nsure SecureLogin 3.51.1 User Guide (using SecureLogin to enable applications for single sign-on)

Documentation Updates

For the most recent version of this and other SecureLogin guides, see Novell Nsure SecureLogin 3.51.1 on the Novell documentation Web site (http://www.novell.com/documentation).

Documentation Conventions

In this documentation, a greater-than symbol (>) is used to separate actions within a step and items within a cross-reference path.

A trademark symbol (®,™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

1 Introduction to Scripting

This section provides information on the following:

The Scripting Language

The SecureLogin scripting language is a key feature of single sign-on functionality. The scripting language enables SecureLogin to be compatible with almost all network environments and applications, including those that are developed in-house, without the need to modify any application code.

SecureLogin uses the scripting language to provide a flexible single sign-on and monitoring environment. For example, the SecureLogin Windows Agent watches for application login boxes. When a login box is identified, the agent runs a script to enter the username, password, and background authentication information.

The script language is used in individual application scripts to retrieve and enter the correct login details. These scripts are stored and secured in a directory (for example, Novell® eDirectory™) to ensure maximum security, support for single-point administration, and manageability.

The script language is used to automate many login processes, such as multi-page logins and login panels requiring other information (such as a surname or telephone number) stored in the directory. The script language also contains the commands required to automate password changes on behalf of users and request user input when it is required.

The scripting language has the following advantages:

- Enables you to define single sign-on methods for almost any Windows*, mainframe, Internet, intranet, terminal server, or UNIX* application.
- Provides single sign-on functionality without installing back-end modules on your application servers.
- Provides the flexibility for you and your application owners to choose what to do after an application-generated message is detected.

  This feature gives you full control over your single sign-on environment.
- Allows more sophisticated single sign-on to supported applications, including the ability to seamlessly handle several versions of one application.

  This feature is especially important when you upgrade your applications.

- Stores SecureLogin data (for example, user credentials and application scripts) in the directory and protects the data.
- Can use Novell SecretStore® technology to provide additional benefits:
  - Provides an additional level of security.
  - Enables you to share secrets with other applications (for example, Novell iChain® and Novell Portal Services).
  - Enables you to use NICI between the workstation and the server.

  SecretStore requires Novell eDirectory.
- On startup, locates objects in the directory and caches their encrypted contents in memory (and optionally on disk) for later use by the workstation's SecureLogin single sign-on agent.

SecureLogin allows you to define which applications are enabled for single sign-on. This option gives you the following:

- Full control of which applications are single-sign-on enabled.
- The ability to update the entire directory database with a new application login script by updating a single object.

The corporate scripts are stored in a Container object rather than individual User objects. For users, the result is a less complex system. For you as the administrator, the improved login mechanisms provide the following:

- A greater level of accountability with increased productivity and security.
- A reduced workload at the help desk because of significantly fewer password resets.

Scripting Basics

A script is essentially a list of instructions that SecureLogin follows to perform various tasks upon various windows. For example, for Windows applications (*.exe files) a script is written for each executable file that you want SecureLogin to act upon. In that script, you are able to assign different instructions to each screen that an executable file or application might produce. Therefore, you have the choice of acting upon only the login panel, selected windows, or every window (for example, account locked, invalid username, invalid password, expired password) that the executable file produces.

SecureLogin follows scripts from left to right, top to bottom. However, with the use of Flow Control commands (for example, Call) you can skip, repeat or jump to certain parts of the script.

With the use of Dialog Specifier commands, you can assign individual sections of a script to the different windows that an executable file might produce. Such assignments allow the login dialog box, for example, to be treated differently from the “wrong password” dialog box.

The scripting language can read from and write to variables. These variables enable SecureLogin to use corporate scripts while still keeping each individual user’s secrets securely stored in the directory. The scripting language can also read attributes (for example, the user’s full name or phone number) from the username’s attributes in the directory. For more information on variables, see “Understanding Script Variables” on page 17.

SecureLogin is able to write information to the screen as well as read from it with the use of commands such as ReadText. You can use this functionality to extract usernames, domains in use, and error messages. You can then use Variable Manipulator commands to perform calculations, break apart information, and join the information back together.

All these features come together to form an extremely powerful language that is able to accomplish almost any required login task.

Structuring and Executing Scripts

A script is a simple piece of text that is stored by the SecureLogin script broker. Scripts store the login name, password, and any other information in fields required for authentication. Scripts are stored in the local database and in the directory.

Each script has a name, called the application name, which uniquely identifies it within a particular single sign-on database. In addition, each script has a type, known as the application type (prebuilt, Windows, Web, or Java*). The application type specifies the type of application the script refers to and which of the SecureLogin components executes it.

SecureLogin scripts execute sequentially from the first line. There are no flow control mechanisms as such. However, in some instances a component might choose not to execute certain statements, as in the Dialog / EndDialog or If/Else/EndIf statements.

Each line in the script consists of one or more arguments. Arguments are separated by white space (spaces and tabs), unless they are enclosed in quotation marks. For example, the following line contains three arguments:

```
A simple "command to get started"
```

The arguments are as follows:

- A
- simple
- "command to get started"

After a script has been broken into arguments, the quotation marks are removed. If you need to specify an actual quotation mark in a script, precede it with a backslash (for example, \").

The first argument on a line is the command. It specifies the action that the line takes. The rest of the arguments on the line, if any, are passed to that command. Different commands take varying numbers of arguments. For a list of commands and their arguments, see Chapter 5, “SecureLogin Commands,” on page 37.

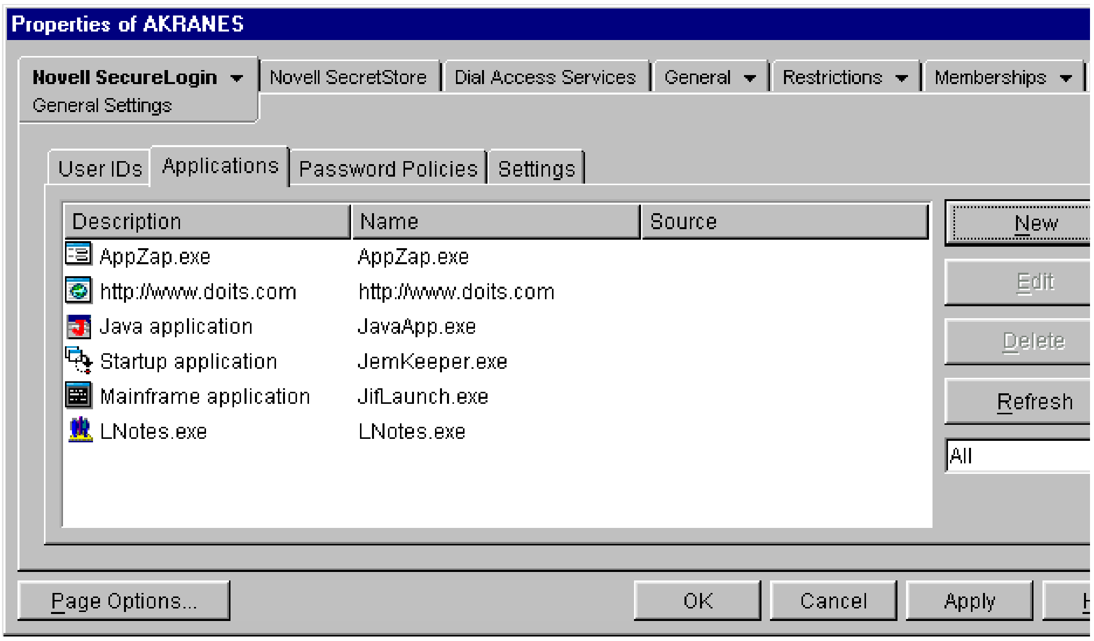
A line that begins with a # character is treated as a comment and is ignored in the script language. The following example illustrates the use of the # character:

```
Window "login"
Delay 30
#SecureLogin ignores this line and the next two lines
#while executing the script.
#The Delay command is used to wait for the window to be created correctly.
Type "$Username"
```

Scripts are interpreted as SecureLogin components to perform the sign-in process. This functionality ensures that any variables that are substituted are current.

Types of Scripts

Using the Applications tab, you can view a list of applications that are enabled for single sign-on. The Description column displays information about the application, including icons that represent the type of script stored for that application.


Properties of AKRANES

Novell SecureLogin | Novell SecretStore | Dial Access Services | General | Restrictions | Memberships

General Settings

User IDs | Applications | Password Policies | Settings

Description	Name	Source
AppZap.exe	AppZap.exe	
http://www.doits.com	http://www.doits.com	
Java application	JavaApp.exe	
Startup application	JemKeeper.exe	
Mainframe application	JifLaunch.exe	
LNotes.exe	LNotes.exe	

The following table provides information on the icons.

Script Type	Description
Windows application	For Windows-based applications. Represented by a generic window icon.
Web application	For Web-based applications. Maintains backward compatibility with older scripts. Represented by a ringed planet. For new Web scripts, use the Advanced Web script type.
Advanced Web	For Web-based applications. Enables SecureLogin to use legacy script commands along with commands that were introduced with SecureLogin 3.5.
Java application	For Java-based applications. Represented by a red J.
SecureLogin Startup	For applications that are executed during the startup of SecureLogin. Represented by a circular arrow.
Terminal Launcher	For applications that require access via an emulator. Represented by a black-with-white monitor.
Lotus Notes	For scripts that are used to log in to Lotus Notes.
Corporate script	For applications applied at a Container level. Represented by a down-arrow in the lower left corner.

When you add an application that has a prebuilt script, SecureLogin automatically enters a description for that application. When you add an application that doesn't have a prebuilt script, the name that you enter to describe the application appears in the Description column.

2 Using Symbols and Variables

This section contains information on the following:

- "Symbols Used in Scripts" on page 15
- "Understanding Script Variables" on page 17

Symbols Used in Scripts

The SecureLogin scripting language uses the following symbols to define the function of lines in the script:

- "The Pound Symbol (#)" on page 15
- "Quotation Marks ("")" on page 16
- "The Percent Sign (%)" on page 16
- "The Exclamation Mark (!)" on page 16
- "The Backslash (\)" on page 16
- "The @ Symbol" on page 17
- "The Hyphen (-)" on page 17

The Pound Symbol (#)

Use the pound or hash symbol (#) to define a line of text as a comment field, so that you can leave notes within a script. The script engine ignores any line that starts with a # symbol.

You can use comment lines to do the following:

- Define sections of a script, such as login window or change password window.
- Explain complex sections of a script.
- Remove command lines from a script while the script is being written and edited.

  Removing lines by commenting them saves having to continuously delete and rewrite lines while testing.
- Make notes, such as when the script was written and what version of the software the script was written for.

When used within a command (for example, Class or Type), the pound or hash symbol takes on a different meaning, specifying a numerical value. This numerical value can be used to specify a target for the command. The command listings provide additional details. See Chapter 5, "SecureLogin Commands," on page 37.

Quotation Marks ("")

Use quotation marks ("") to group text or variables that contains spaces. Use these symbols with commands such as Type, MessageBox, and If -Text. Without quotation marks, command lines such as the following won't work as expected:

```
Type Database 2
MessageBox Confirm your login details.
If-Text Login failure
```

For these command lines to work, quotation marks must be used to group the text:

```
Type "Database 2"
MessageBox "Confirm your login details."
If-Text "Login failure"
```

The Dollar Sign ($)

Use the dollar sign ($) to define a SecureLogin variable that is persistent. Use these variables to store information such as usernames and passwords. For more information on the $ variable, see "Stored Variables" on page 17.

The Question Mark (?)

Use the question mark (?) to define the use of a runtime variable. The values of these variables are not stored in the directory. They are reset each time SecureLogin is started. However, with the use of the Local command, these variables are reset each time the script is started. Use these variables to store temporary information, such as counting, data processing, and date information.

The question mark is also used with several internal system-generated variables. For more information on the ? variable, see "Runtime Variables" on page 18.

The Percent Sign (%)

Use the percent sign (%) to define the use of a directory attribute. The attributes that are available vary, depending on the directory in use and the setup of the directory. Examples of the attributes you can use are %CN and %Surname.

For more information on the types of variables, see "Understanding Script Variables" on page 17.

The Exclamation Mark (!)

Use the exclamation mark (!) to define the use of a passticket. A passticket is a one-time password that is generated using a combination of an encryption key, encryption offset, and the current time. Such passwords are only valid for a short time (from 30 seconds up to 2 minutes). The encryption key and offset can be defined manually or automatically generated for the program.

For more information, see "Passticket Variables" on page 20.

The Backslash (\)

Use the backslash symbol (\) with the Type and SendKey commands to specify the use of a special function. The symbol is used in conjunction with values to simulate keystrokes. For example, use \N to simulate pressing the Enter key in a Windows application.

For details on the values that can be used with the backslash symbol, see the command listings in Chapter 5, “SecureLogin Commands,” on page 37.

The @ Symbol

The @ symbol is similar to the backslash symbol. However, the @ symbol is limited to HLLAPI-enabled emulators. Use it in conjunction with values to simulate keystrokes. For example, use @E to simulate pressing the Enter key in a terminal emulator application.

For more information on the @ symbol, see “@ Commands Used with Emulators” on page 120 and the command listings.

The Hyphen (-)

Use the hyphen (-) as a switch within several commands (for example, If and Type). Use it in conjunction with values to modify the behavior of commands (such as -Raw), or to switch certain functions (such as -YesNo) on or off.

For details on the values that you can use with the hyphen, see the command listings in Chapter 5, “SecureLogin Commands,” on page 37.

Understanding Script Variables

This section contains information on the following:

- “Stored Variables” on page 17
- “Runtime Variables” on page 18
- “Directory Attribute Variables” on page 19
- “Passticket Variables” on page 20
- “Variables and Values” on page 20

Generally, don’t use spaces when you specify variables. For example, specify $Username_Alias instead of $Username Alias. If you use spaces, enclose the entire variable in quotation marks (for example, “$Username Alias”).

Each variable defaults to the platform specified in the script name. By using a variable, you can change this by using a variable. For example, you might have the following script, named www.website1.com:

```
Type $username
Type $password password
```

You might want to use these variables in a script named www.website2.com:

```
Type $username (www.website1.com)
Type $password (www.website1.com) password
```

Stored Variables

Stored variables are the most common style of variable used in SecureLogin scripts. They are preceded with a dollar sign ($). Use these variables to store the values used during the login process, such as usernames, passwords, and any other required details.

The values of these variables are stored in the directory under the User object. The values are encrypted so that only the user can access them.

Variables can be stored separately for each application's script, so that the username variable is different for each application. However, you can set an application to read variables from another application's script. This is useful for applications that share user accounts or passwords. For details on how to do this, see the description in "SetPlat" on page 90.

If a stored variable is referenced in a script, and no value has been stored for that variable (for example, the first time the program is run), SecureLogin prompts the user to enter a value for the variable. This is an automatic process. It is also possible to manually trigger this process to prompt a user to enter new values for particular variables. For details on how to do this, see the description of "DisplayVariables" on page 53 and "ChangePassword" on page 44.

Example: Stored Variables in Use

```
Dialog
   Class #32770
   Title "Login"
End Dialog

Type $Username #1001
Type $Password #1002
Click #1
```

To hide a variable from an administrator by displaying it as **** instead of clear text, begin the variable name with $Password. For example, $Password PIN is protected, but $PIN isn't.

Runtime Variables

SecureLogin is able to read details from the system and use the details to create variables that can be incorporated into the scripting language. These variables are automatically generated as runtime variables. They can be used in the same manner within any application definition.

In general, use runtime variables for date information, to store calculations, or to process data. You can also use runtime variables for temporary passwords and usernames.

Runtime variables are preceded with the question mark symbol (?). They have two modes: Normal and Local. Normal runtime variables are reset each time SecureLogin is started. Local runtime variables are reset each time the script is started. Runtime variables are Normal by default. For details on how to switch a runtime variable from General to Local mode, see the description in "Local" on page 68.

Runtime variables aren't stored in the directory or the SecureLogin local cache. They are used straight from the computer's memory. For this reason, don't use runtime variables to store usernames, passwords, or other details that SecureLogin will need to access in the future. If runtime variables are used for such details, the user will be prompted to enter them each time the script is run or each time SecureLogin is restarted.

Users aren't prompted for $variables that have no value. These variables are given the value NOTSET.

The following table lists the runtime variables that SecureLogin supports.

Variable Name	Description
?*SysVersion*(system)	The local SecureLogin Windows agent version. This variable can be used to determine whether specific support is built into the product running on the user's workstation. The format of the variable is major.minor.subminor.build. For example, 03050109 represents v3.5.1.9, in WW.XX.YY.ZZ format.
?*BrowserType*(system)	Contains either Internet Explorer or Netscape and indicates which browser the script is running in. This variable is set only in a Web script.
?*SysUser*(system)	The name of the user currently using SecureLogin.
?*SysPassword*(system)	The directory password of the user currently using SecureLogin. This variable is only available if the appropriate options are chosen when installing SecureLogin.
?*SysContext*(system)	The context where the current SecureLogin user's directory object exists.
?*SysTree*(system)	The name of the directory tree that SecureLogin is currently using.
?*SysServer*(system)	The name of the server that was entered in the Novell login dialog box. This variable is only available if the Novell client login extension is installed.
?CurrTime(system)	The running time in seconds from January 1970 to the present. Use this variable to force password changes every *x* days. Don't use scripting to force a password change if you want to continue having the application generate the change password event (recommended). Use this variable on applications where a password expiration can't be set at the application's back end.

Example: A Runtime Variable in Use

```
Dialog
  Class #32770
  Title "ERROR"
EndDialog

Local ?ErrorCount
Increment ?ErrorCount
If ?ErrorCount eq "2"
   MessageBox "This is the second time you have received this error. Would
you like to reset the application?" -YesNo ?Result
   If ?Result eq "Yes"
      KillApp "App.exe"
      Run "C:\App\App.exe"
   Else
      Set ?ErrorCount "0"
   EndIf
EndIf
```

Directory Attribute Variables

SecureLogin is able to read directory (for example, eDirectory) attributes from the currently logged-in user's object. For example,

```
Type $cn
```

reads the CN attribute from the currently logged in user's object, then types the attribute.

Use % variables only when SecureLogin is configured to use a directory and only on single-valued text attributes.

Passticket Variables

Passticket variables are used to generate one-time passwords. Passticket variables are preceded with the exclamation mark symbol (!).

To use a passticket variable, you must create and define numerical values for stored variables with the names $DESKEY and $DESOFFSET. The SecureLogin script parser uses these numbers to generate the one-time password.

After the stored variables have been defined, you use the following passticket variable to generate a password.

`!`*`Name of application definition`*

or

```
!default
```

For example, to use a passticket variable for the Outlook application, you create two stored variables called $DESKEY and $DESOFFSET under the Outlook application definition. You then set values for the two stored variables. You can then use the variable *!Outlook* whenever you need to generate a one-time password.

You can also use !Default, which automatically reads the values from the current application definition.

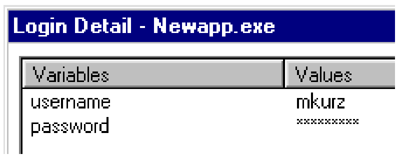
If the credentials used to generate one-time passwords (OTPs) don't already exist in a secured area of the SecureLogin cache (that is, the $DESKEY and $DESOFFSET variables aren't defined), they are retrieved from the closest SecureLogin Advanced Authentication Server.

If the $DESKEY and $DESOFFSET variables are not given values, SecureLogin generates random values the first time a password is generated and stores the values for later use.

Variables and Values

SecureLogin stores your username and password in the form of a variable and its value. Your username and password are not included in the script. Instead, a variable is used in the script. The value of the variable is your username or password.

Logins consist of a set of variables. You can use any name for a variable. A variable can contain any text. As the following figure illustrates, the Variable column usually just contains the password and username for a particular application. However, in some more complicated applications, there might be other variables.



Variables	Values
username	mkurz
password	*********

This example has two variables: username and password. The script for this application has the following line:

```
Type $Username
```

The variable $Username is written in the script. The value of $Username in this example is mkurz. When the script runs, SecureLogin looks for the variable $Username in the user's login details. There it finds and reads the value mkurz. SecureLogin enters the value mkurz into the login dialog box.

At runtime, the value of the variable $Username (mkurz) is read. However, in the script you only see the variable $Username.

3 Best Practices in Scripting

Use the following rules when writing a SecureLogin script. Although these rules are not compulsory, they accomplish the following:

- Make reading the script easier.
- Help you modify the scripts if you need to make changes later.

Example scripts in this guide follow these rules.

Using Capital Characters

Use capital characters where applicable.

Use This	Instead of This
`MessageBox "Some text" -YesNo ?Result`	`Messagebox "Some text" -yesno ?result`

Indenting

Indent sections of scripts between pairs of commands, such as Dialog/EndDialog, Repeat/ EndRepeat, and If/Else. An indent of three spaces is optimal.

Use This	Instead of This

`If -Text "Some text"`
   `#Do this`
`Else`
   `#Do this`
`EndIf`
	`If -Text "Some text"`
	`#Do this`
	`Else`
	`#Do This`
	`EndIf`

Leaving Blank Lines

Leave a blank line between sections of the script, such as the Dialog block and the rest of the script.

Use This	Instead of This

`# Login Dialog Box`
`Dialog`
   `Class #32770`
   `Title "Login"`
`EndDialog`
 	
`Type $Username #1001`
`Type $Password #1002`
`Click #1`
	`# Login Dialog Box`
	`Dialog`
	   `Class #32770`
	   `Title "Login"`
	`EndDialog`
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

Placing and Naming Subroutine Sections

Place subroutine sections of the script at the bottom of the script, not halfway through. The name of the subroutine should describe its function. It shouldn't simply be a numeric name. The name should follow the rules for capitalizing.

Using Quotation Marks for Text in Commands

Even if quotation marks aren't required, always use them around segments of text in commands.

Use This	Instead of This
`Type "Text"`	`Type Text`
`Or`	`Or`
`If -Text "Login"`	`If -Text Login`

Capitalizing Variables

Begin variable names with a capital letter.

Use This	Instead of This
`Type $Username`	`Type $username`

Placing Switches

Place switches directly after the command (for example, Type -Raw, If -Text).

Use This	Instead of This
`Type -Raw $Username`	`Type $Username -Raw`

Password Policy Names

Use program names to represent password policy names for the program they are used for. Don't use numerical names.

Use This	Instead of This
`GroupwisePasswordPolicy`	`PasswordPolicy3`

Hiding Variables

If you want to hide a variable from an administrator by displaying the variable as **** instead of clear text, begin the variable name with $Password. For example, $PasswordPIN will be protected, but $PIN won't be protected.

Using Comments

Use comments throughout the script to explain what each section does and how it does it. At the top of the script, enter and comment out information such as who wrote the script and the date that the script was last modified.

NOTE: To help explain example scripts in the SecureLogin Commands section, this *Guide* places explanations to the left of the scripts. For example, see Example: Windows Script in "AAVerify" on page 38.

Use This	Instead of This
`#Written by M. Kurz June 7, 2002`	`Dialog`
`#Modified by C. Bertrand July 3, 2004`	`   Class #32770`
	`   Title "Login"`
`#Login Dialog Box`	`EndDialog`
`Dialog`	
`   Class #32770`	
`   Title "Login"`	
`EndDialog`	

Using the Include Command

Wherever possible, use the Include command to create generic scripts for commonly used elements, such as password change procedures. For common processes within the script, use subroutines.

4 Working with Scripts

To help you customize the login capabilities of your users, this section provides information on the following:

- "Accessing or Editing Scripts" on page 27
- "Using Corporate Scripts" on page 28
- "Finding Control IDs" on page 33
- "Advanced Windows Scripting" on page 35

Also see Building Blocks for SecureLogin Scripting (http://www.novell.com/coolsolutions/slmag/features/a_scripting_building_blocks_sl.html).

Accessing or Editing Scripts

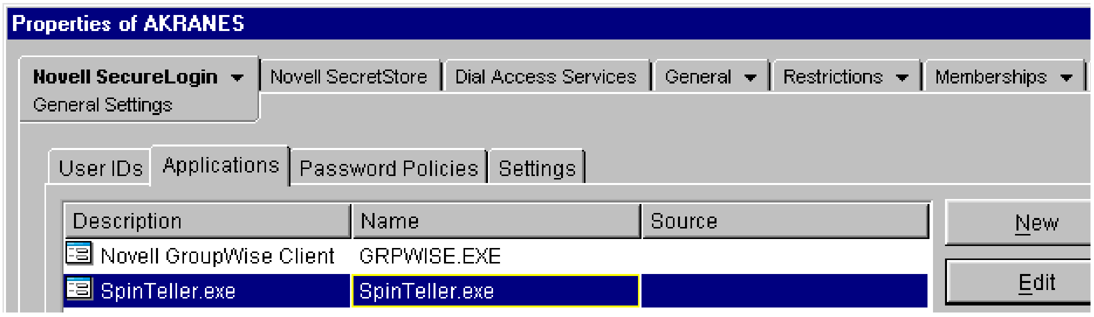
Each single-sign-on-enabled application has a script. A basic script tells SecureLogin how to log in to the application. You can create more involved scripts that allow you to perform other password management tasks, such as detecting expired passwords and generating new passwords.

SecureLogin has a scripting wizard as well as a host of prebuilt scripts. These features enable you to easily enable a broad range of applications for single sign-on.

You manage scripts for applications by using ConsoleOne®, the Microsoft Management Console (MMC), SecureLogin Manager (slmanager.exe), or the SecureLogin workstation client.

1 Right-click an object (for example, an OU or User object), then click Properties.

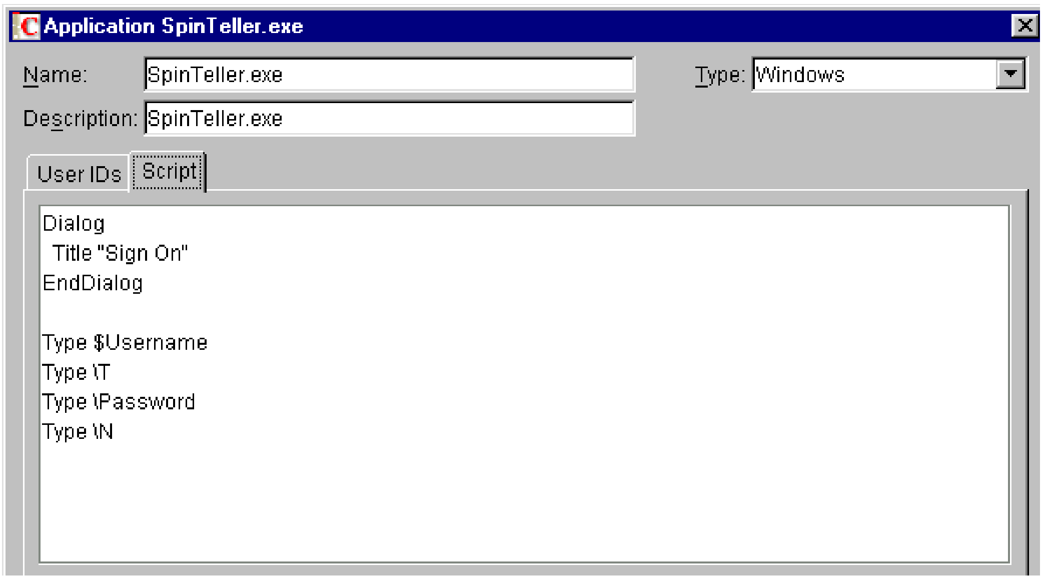
2 Click Novell SecureLogin > General Settings > Applications.



Description	Name	Source
Novell GroupWise Client	GRPWISE.EXE	
SpinTeller.exe	SpinTeller.exe	

3 Click an application, click Edit, then click Script.

The following figure illustrates the Script tab and an example simple script.



```
Dialog
 Title "Sign On"
EndDialog

Type $Username
Type \T
Type \Password
Type \N
```

4 Make changes.

For commands used in scripts, along with example scripts for those commands, see Chapter 5, “SecureLogin Commands,” on page 37.

To experiment with a sample script and a test application, see Chapter 6, “Practicing Your Scripting Skills,” on page 109.

For a scenario to enable authentication to MyRealBox through single sign-on, see Using Novell SecureLogin to Enable Web Applications for Single Sign-On (http://developer.novell.com/research/appnotes/2002/may/02/apv.htm#1228584) in the May 2002 issue of *AppNotes*

Using Corporate Scripts

Corporate scripts are normal scripts that are assigned to a Container object instead of to a User object. Corporate scripts differ from other scripts in two ways:

- The application is added in an Organization or Organizational Unit (OU) object instead of a User object.
- You use ConsoleOne, MMC, or SecureLogin Manager to add the application.
- User objects in the Organization or OU object, or objects lower in the directory tree, inherit settings from corporate scripts.

Windows Application, Web, Startup, and Terminal Launcher scripts can all be implemented as corporate scripts.

Where to Locate Corporate Scripts

In a corporate environment, all of the applications deployed to the users should match. You can ensure this by using Novell® ZENworks®. This means that the scripts for the applications will be identical. In a large tree, this could mean putting a copy of all of the scripts into each User container. You can copied these scripts, but only as a block. If you then need to update a single script you would have to copy all of the scripts to each container.

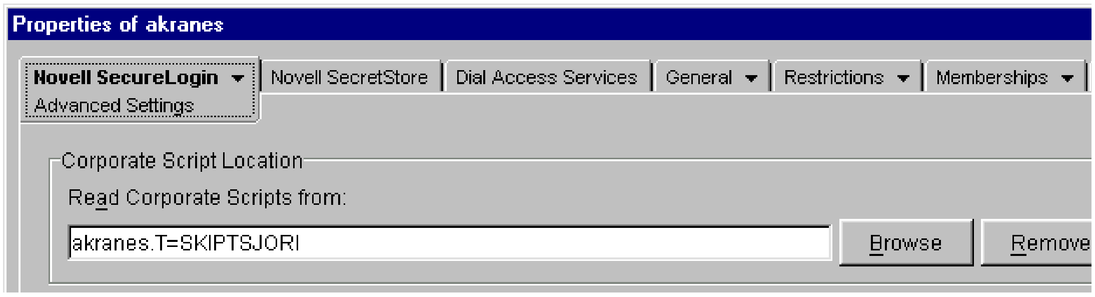
To eliminate this administrative overhead, you can point all of the users to a single corporate-scripts container. To make searching easy, you set this container relatively high in the tree, partition it, and replicate it to all user locations. Afterwards, when an application is introduced or modified, you need to add or modify only the script in one container. The script is then replicated out to all users.

Because they are automatically rolled out to all User objects held in the Container object, corporate scripts simplify implementing and administering SecureLogin single sign-on. By using this method, you don't have to configure applications for each individual user in your organization. All users read and use the same scripts.

Inheritance and Redirection

A corporate script is defined on a Container object. Objects within and below that container inherit the script.

After you create a corporate script, you can use the Read Corporate Scripts From edit box in ConsoleOne, MMC, or SecureLogin Manager to point to and use that script.



Read Corporate Scripts from: akranes.T=SKIPTSJORI

If you leave the Read Corporate Scripts From edit box empty, SecureLogin by default does the following:

- Reads the parent objects of the user (up to the object where you defined the Stop Walking Here setting as Yes).
- Applies these inherited settings to the user.

When you specify a context in this field, SecureLogin applies the settings of this context only and doesn't read any parent objects. The settings for the object are redirected from the context you specify in the Read Corporate Scripts From edit box to the object.

Scenario. The VMP company has 100 employees in the RDev department. VMP is a Container object, and RDev is a child Container object. Employees in the RDev department inherit settings from the VMP container.

Ten employees in the RDev department require special SecureLogin settings for the AZ application. You create a new Container object (RDevAZapps) under the VMP container. You log in as admin, select the RDevAZapps Container object, then select Properties > Novell SecureLogin > General Settings. You create a script for the application that the 10 employees will use.

Next, you select one of the 10 users and access the Advanced Settings tab. You browse to and select the new RDevAZapp container, then click OK. That user now gets settings for the AZ application from the script in the RDevAZapps container. The settings have been redirected from the RDev container to the RDevAZapps container. You redirect all 10 users.

Inheritance of SecureLogin data stops at the container or OU. Redirected containers or OUs don't inherit settings, enabled applications, or password rules that an Organizational Policy container or OU inherits from another container or OU.

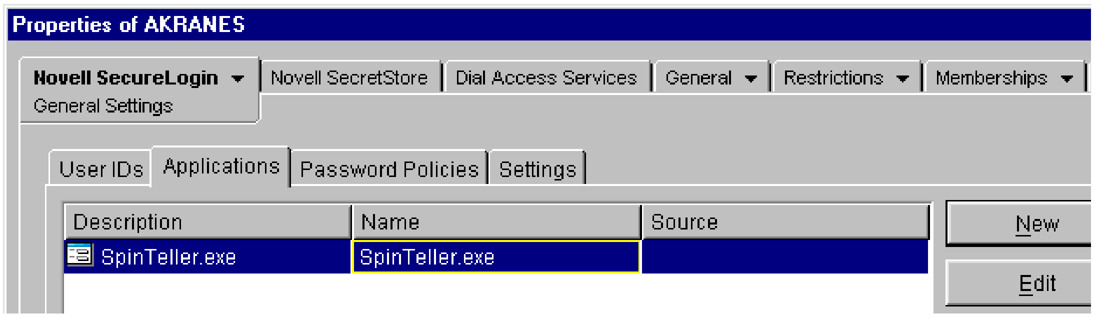
Creating a Corporate Script: MMC or ConsoleOne

1 Log in as Admin or an Admin equivalent.

2 Navigate to the Container object where you want to create the corporate script.

3 Right-click the Container object, then click Properties.

4 Click Novell SecureLogin > General Settings > Applications > New.



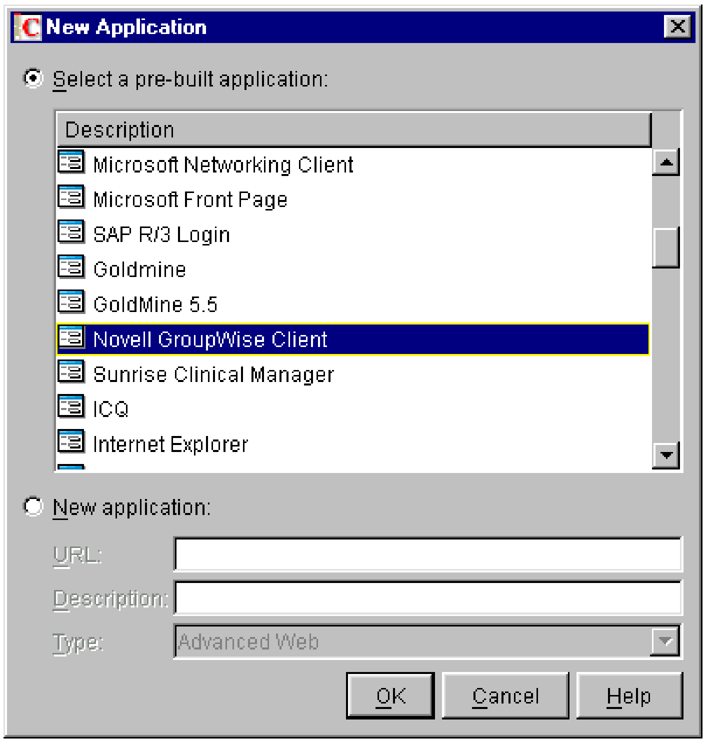
Description	Name	Source
SpinTeller.exe	SpinTeller.exe	

To use a prebuilt script, go to Step 5.

To create a new script for an application, without using a prebuilt script, go to Step 6.

5 (Optional) Add a prebuilt script to the application list.

5a Click Select a Prebuilt Application, scroll to and select the desired application, then click OK.

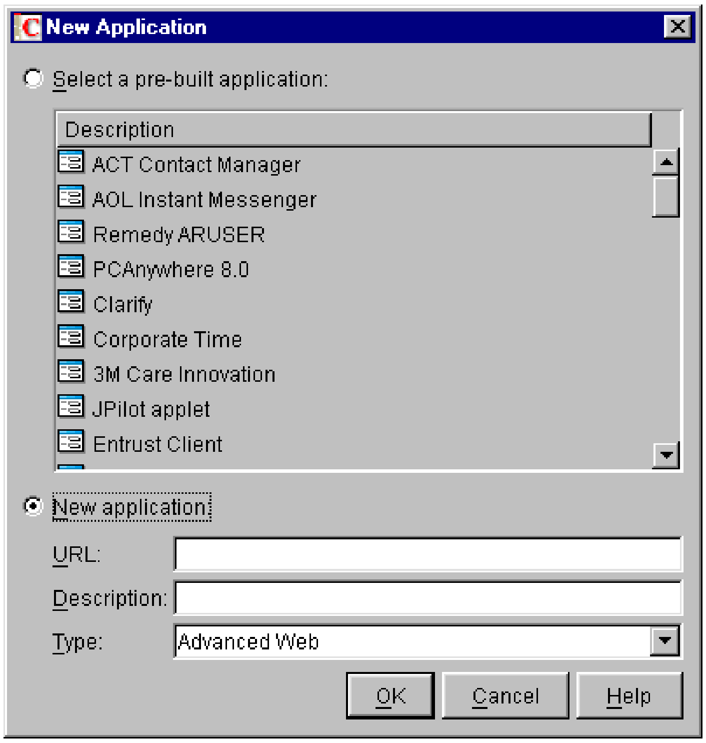


5b In the Applications [*application name*] dialog box, save the script by clicking OK.

After you click OK, you return to the Applications tab. Go to Step 7.

6 (Optional) Add an application that doesn't have a script.

6a From the New Application dialog box, click New Application.


New Application

○ Select a pre-built application:

Description
ACT Contact Manager
AOL Instant Messenger
Remedy ARUSER
PCAnywhere 8.0
Clarify
Corporate Time
3M Care Innovation
JPilot applet
Entrust Client

● New application:

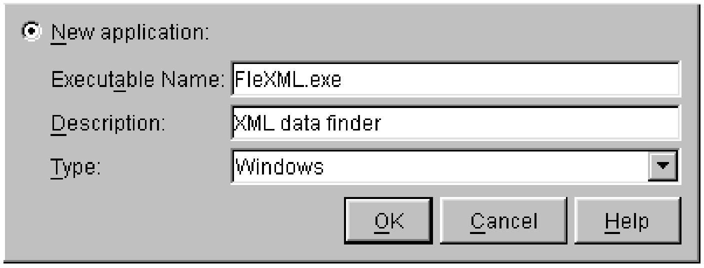
URL:

Description:

Type: Advanced Web

6b Type a name in the first text field.

For a Windows application, type the executable filename. For a Web application, type the URL. This name will display in the Description column on the Applications tab.


● New application:

Executable Name: FleXML.exe

Description: XML data finder

Type: Windows

6c Select a type (for example, Java, Startup, Windows) from the drop-down list, then click OK.

7 In the Applications tab, save the data by clicking Apply.

The next time the selected application is launched, users will be prompted to enter their credentials.Whenever the application is subsequently launched, SecureLogin enters the users' credentials, as though the login process has been eliminated.

8 Click the newly added application, click Edit, then click Script.

9 Add or edit a script.

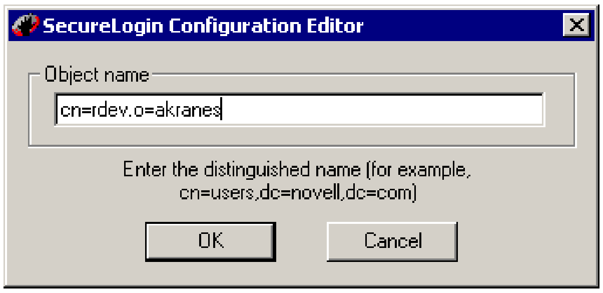
For hands-on experience with basic scripting, work through the tutorial in Chapter 6, "Practicing Your Scripting Skills," on page 109.

For script commands, with accompanying example scripts and explanations, see Chapter 5, "SecureLogin Commands," on page 37.

Creating a Corporate Script: SecureLogin Manager

1. Log in to the workstation as Admin or equivalent.
2. Run SecureLogin.
3. Launch SecureLogin Manager.

   Run slmanager.exe, found in the \securelogin\client\tools directory.
4. Type the distinguished name of the object where you want to create a corporate script.

   cn=rdev.o=akranes

   Enter the distinguished name (for example, cn=users,dc=novell,dc=com)

   You logged in to the workstation as Admin or equivalent, then accessed SecureLogin as that user. SecureLogin Manager uses the rights of the authenticated user to create the corporate script for the context or object that you specify.

   For AD and LDAP, use LDAP naming conventions (for example, cn=admin,cd=akranes). For eDirectory, use eDirectory conventions (for example, cn=admin.o=akranes).
5. Click OK.

Exempting an Object from a Corporate Script

Local scripts take precedence over corporate scripts. Occasionally, you might want a particular user to use a script other than the corporate script. To do this, create a local script for the application at the User object level.

If you have a corporate script for an application, and you have a user who should not have that application single sign-on enabled, create a blank local script for the application at the User object level.

You can also use this procedure to exempt a Container object from corporate scripts inherited from Container objects that are higher in the directory tree.

Finding Control IDs

A control ID is a number that uniquely identifies a field, such as a button, within a window. Many script commands related to logging in to Windows applications require a control ID.

To help you determine these control IDs, SecureLogin includes a tool called Window Finder. This tool displays information about a control that you have selected.

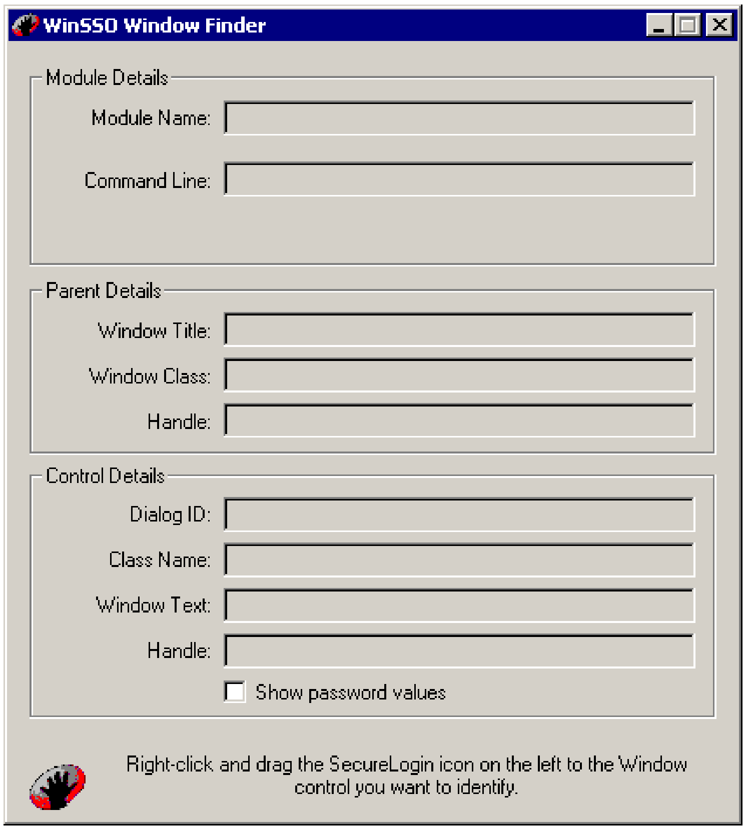
To inspect a control:

1 Click Start > Programs > Novell SecureLogin > Window Finder.

2 Right-click the SecureLogin icon and drag it over the control of interest.

   The Window Finder tool displays the details of the control.

   If an application page hides the Window Finder, click the WinSSO Window Finder icon on the system tray.



Right-click and drag the SecureLogin icon on the left to the Window control you want to identify.

The following table provides information on fields in the dialog box:

Field	Description
Module Name	The name of the executable that created the window. Use this name for the application name of the Windows single sign-on script.
Command Line	The path to the module or executable.
Window Title	The title of the window that contains the control. You can use this title in a window or title statement.
Window Class	A field for information only. Each window has a class associated with it.
Handle	The handle of the parent window.
Dialog ID (Control ID)	A unique identifier. Each control has a unique identifier, called the control ID. Use this number as the target for Type, Click, Ctrl, and SetPlat statements. For information on each of these commands, see Chapter 5, "SecureLogin Commands," on page 37.

Field	Description
Class Name	A name that determines the type of the control. For single sign-on to work correctly, the SecureLogin Windows component must be able to read and write text to the specified control. The class name determines the type of the control and whether reading and writing is possible. Supported classes include edit, combobox, and static.
Window Text	A field that displays the text contained within the control. This information can be useful in troubleshooting and for writing the regular expression required by the Setplat command.
Handle	The handle of the control window.

Advanced Windows Scripting

Advanced Windows Scripting (AWS) is an extension to the single sign-on scripting language. AWS enables arbitrary Windows messages to trigger scripts. In earlier versions of SecureLogin, a script written for an application was triggered when (and only when) the application sent a WM-CREATE message. AWS provides Event, which is a single new specifier.

The Event command takes exactly one parameter, which is the Windows event that triggers execution of the controlled block. The following script illustrates this block:

```
## BeginSection: "Global Script Configuration"
## EndSection: "Global Script Configuration"
## BeginSection: "Login Window"
Dialog
  Class "#32770"
  Title "Novell iFolder Login"
  Ctrl #1
  Ctrl #1092
  Event WM_ACTIVATE
EndDialog
ReadText #1092 ?Message
If ?Message eq "Place a shortcut to the iFolder on the desktop"
    If ?Failure eq 1
        Set ?Failure <notset>
        EndScript
    Else
        Setprompt "Username:"
        Type $Username #1007
        Setprompt "Password:"
        Type $Password #1079
        Setprompt "iFolder Server Name:"
        Type $Optional #1001
        Click #1
        Setprompt "Enter your iFolder account information."
    Endif
EndIf
## EndSection: "Login Window"

Dialog
  Parent
    Title "Novell iFolder Login"
  EndParent
  Title "Novell iFolder"
  Ctrl #2
EndDialog
```

```
Readtext #65535 ?ErrorMessage
If ?ErrorMessage eq "You must enter a server address."
    Click #2
    Set ?Failure 1
EndIf
```

Advanced Windows Scripting meets two requirements:

- It handles login dialog boxes that are created some time before they are displayed.

  In earlier SecureLogin releases, SecureLogin launched scripts on a Create event. Whenever a window was created, SecureLogin could key off that event. When the login dialog box was created, SecureLogin was able to log in from that event.

  However, some applications have a feature where the login dialog box is created long before it is displayed and before a user is able to actually log in. When this login dialog box is created, it sends a WM_CREATE message, which triggers any associated script.

  Scenario: SecureLogin before AWS. You log in to Novell iFolder®. The Create event fires a script and logs you in. However, iFolder creates and instantiates a subsequent login. You close iFolder but still have it running on your system tray. You log in to iFolder again. SecureLogin is unable to recognize that event.

  Using AWS, you can delay execution of the login script until, for example, the login dialog box is activated (and fires a WM_ACTIVATE message). SecureLogin 3.51.1 recognizes the second event. SecureLogin can key off Create, Activate, Destroy, mouse clicks, and other events.

- It adds value to applications that SecureLogin already handles.

  For example, a login system allows the user to choose from *n* different servers by using a combo box. With AWS, you can delay execution of the script until the user has selected a server from the combo box. You cause the delay by using the EM_SETSEL message. The script can then read which server has been selected, then choose an appropriate credential set.

With AWS, SecureLogin can enable additional applications. Also, scripts no longer need to be Startup scripts so that all the applications launch. The applications can start at any time.

To use AWS, edit the application scripts by adding events. For a list of events and other information on AWS, see “Event” on page 56.

Frame Support

In earlier versions, Web pages were scripted as whole pages, and SecureLogin couldn’t distinguish between frames within the Web page. The Advanced Web scripting feature enables you to script for a particular frame within a Web page.

Scenario: Second Set of Fields. A Web page has three frames in it. Two of these frames have username and password fields. Previous versions of NSL would probably have entered the username and password into the first set of fields. With SecureLogin 3.51.1, you can populate a particular frame by naming the SecureLogin application the URL of that particular frame.

To find the URL of the frame, right-click the frame and select Properties. The next time that you navigate to the Web page that contains that frame, the credentials are automatically populated into that frame.

You can usually get the address of the frame by right-clicking in the frame and selecting Properties.

5 SecureLogin Commands

This section provides information on commands used in SecureLogin scripts. The commands are listed alphabetically.

Following the command, a table provides information in the following format:

Item	Description
Use with:	Java: Use the command as part of a Java script. Startup scripts: Use the command in startup scripts. Terminal Launcher: Use the command in Terminal Launcher scripts. Web: Use the command in Web site scripts. Windows: Use the command in Windows application scripts.
SecureLogin Version:	All: You can use the command in all versions. Version number: The version that the command was introduced in.
Type:	Action: Use the command to perform an action. For example, the Type command types information into an application. Dialog specifier: Use the command to define dialog boxes. For example, see "Parent / EndParent" on page 74 and "Class" on page 45. Flow control: Use the command to direct SecureLogin to a specific location in the script. For example, see "Repeat / EndRepeat" on page 81 and "EndScript" on page 56. Variable manipulator: Use the command to modify variables. For example, see "Add" on page 40 and "Subtract" on page 99.
Usage:	The command argument / *variable*. Variables, values, text, and other items that you type are italicized in the tables. Optional items that you type are placed in brackets ([ ]).
Arguments:	Argument / *variable*: A brief explanation of the argument or variable.
Description:	An explanation of the command and how it is used.
Syntax Examples:	Examples of the various ways the command can be written in a script.
Example: Script type Script explanation	An example script.

Beginning with the SecureLogin 3.51.1 release, the Eq and Noteq comparators are now case insensitive. The Seq and SNotEq comparators have been created for use when case sensitivity is required. The commands themselves are not case sensitive. You can use seq, Seq, or SEQ. However the string the command is matching with is case sensitive. The string "hello" is not equal to "Hello".

AAVerify

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	All (Arguments were added in version 3.0.)
Type:	Action
Usage:	AAVerify -Method *NMAS sequenc*e -User *User object* -Tree *Tree name* [?Result]
Arguments:	
Method	The Novell® Modular Authentication Services (NMAS™) login method that you want to use. If you don't specify a method or login sequence, AAVerify uses the method that was chosen during initial authentication to the directory.
User	The DN of the user that you want to use for the AAVerify command. If you don't specify a username, AAVerify re-authenticates the currently logged-in user.
Tree	The user's NDS® or eDirectory™ tree name. This argument must be used with the -User argument.
[?Result]	An optional variable (preferably a temporary variable) that receives the result of the AAVerify command. The variable is set to either True for success or False for failure.

Item	Description
Description:	Used with SecureLogin Advanced Authentication or NMAS to verify the user, typically before the application Username and Password are retrieved and entered into the login box. AAVerify provides reauthentication to an application, using a strong login method. AAVerify is extremely secure. For example, a user can be forced to enter a smart card and PIN before the application will log in via single sign-on, even though the application natively knows nothing about smart cards and PINs. If the verification succeeds, the [?Result] is set to True. Otherwise, it is set to False. If NMAS is not installed on the workstation, the script sends an error, or an error is returned via [?Result]. To enable AAVerify with NMAS, make sure that nmas.dll is in the PATH. Also make sure that the NMAS client and specified login sequence are installed and properly configured. For details, see Novell Modular Authentication Services (http://www.novell.com/documentation/lg/nmas21/index.html). **NMAS Specific:** If AAVerify is called with no arguments, the currently logged-in user is re-authenticated by using the login method used for the current login. **AA Specific:** When AAVerify is called in an AA environment, the -method parameter must be present. The method must be one of the following: ◆ Any ◆ Biometric ◆ Smart card ◆ Token ◆ Password ◆ Passphrase ◆ Directory password ◆ SecureID If you specify more than one -method argument, you can re-authenticate with any of the specified methods. For example, the command could be used to request authentication using a fingerprint device or a smart card. **IMPORTANT:** When the AAVerify command is added to a script, AAVerify increases the security of the target application only if the script can't be altered. If the script can be modified or overwritten, the AAVerify command can be removed, thereby removing the additional security. Therefore, restrict access to scripts through directory ACLs and SecureLogin settings. With such restrictions in place, only a small, trusted group of administrators can modify, add, or override scripts.
Syntax Examples:	AAVerify AAVerify -Method "Enhanced Password" ?Result AAVerify -Method "Enhanced Password" -User "mkurz" - Tree "Production" ?Result

Item	Description

Example: Windows Script The login dialog box is detected. However, before SecureLogin enters the user's credentials, it prompts the user to provide Advanced Authentication credentials (for example, a smart card and PIN, biometric device, or token).	`# Login Dialog Box`
	`Dialog`
	`   Title "Login"`
	`   Ctrl #32770`
	`EndDialog`
	
	`AAVerify -Method "Enhanced Password" ?Result`
	`If ?Result Eq "True"`
	`   Type $Username #1001`
	`   Type $Password #1002`
	`   Click #1`
	`Else`
	`  Messagebox "Authentication failed. Verify that your smart card is inserted and that your PIN is correct. IT x453"`
	`EndIf`

Add

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	3.0
Type:	Variable manipulator
Usage:	Add *Variable1 Variable2* [?Result]
Arguments:	
Variable1	The first argument, the number that the second argument will be added to. If the optional ?result argument is not passed in, this argument also contains the result of the addition equation. If you use *Variable1* without the ?Result argument, *Variable1* must be a SecureLogin variable. Otherwise, *Variable1* can be any numeric value.
Variable2	The second argument, the number added to the first argument in the equation. V*ariable2* can be a SecureLogin variable or a numeric value.
[?Result]	Optional. The sum or result of the equation.
Description:	Adds one whole number to another. (Doesn't add fractions.) The numbers can be hard-coded into the script, or they can be variables. The result can be output to another variable or to one of the original numbers.

Syntax Examples:	`Add 1 2 ?Result`
	`Add ?LoginAttempts ?LoginFailures`
	`Add ?LoginAttempts ?LoginFailures ?Result`
	`Add ?LoginAttempts 3`
	`Add ?LoginAttempts 3 ?Result`

Item	Description

Example Windows Script: The values of Control IDs 103 and 104 are read into variables. From there they are added, and the result is typed into Control ID 1. From there, they are added, and the result is typed into control ID 1.	`ReadText #103 ?Number1`
	`ReadText #104 ?Number2`
	`Add ?Number1 ?Number2 ?Result`
	`Type ?Result #1`

Attribute

Item	Description
Use with:	Advanced Web Script
SecureLogin Version:	3.5
Type:	Specifier
Usage:	Attribute *Attribute Name Attribute Value*
Arguments:	
Attribute Name	The name of the HTML attribute to discover.
Attribute Value	The value that the above HTML attribute must contain for the condition to be true.
Description:	The Attribute specifier works with the Tag/EndTag command and specifies which HTML attributes and attribute values must exist for that particular HTML tag.

Example: SecureLogin finds the form that has an attribute of “name” with a value of “login.”	`Tag "Form"`
	`  Attribute "Name" "Login"`
	`EndTag`

BeginSplashScreen / EndSplashScreen

Item	Description
Use with:	Terminal Launcher (Generic and Advanced Generic only)
SecureLogin Version:	3.0.4
Type:	Action
Usage:	BeginSplashScreen EndSplashScreen

Item	Description
Arguments:	None
Description:	Displays a Novell splash screen across the terminal emulator window. This command is used to mask any flashing, etc. that is produced by SecureLogin selecting text from the screen. A Delay command at the start of the script ensures that the emulator window is in place before the splash screen is displayed.

Example:
Terminal Launcher Script
After launching the emulator, SecureLogin waits two seconds for it to connect. The splash screen displays to cover the flashing. SecureLogin detects a login and enters a username. The splash screen disappears.
	`Delay 2000`
	`BeginSplashScreen`
	`   WaitForText "ogin:"`
	`   Type $Username`
	`EndSplashScreen`
	`Type @E`

Break

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	2.5
Type:	Action
Usage:	Break
Arguments:	None
Description:	Used within the Repeat/EndRepeat commands to break out of a repeat loop.

Example 1:
Windows Script
SecureLogin reads the screen and searches for “Login”. If “Login” is found, the Repeat loop is broken and the script continues. If it isn’t found, the script checks again.
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Repeat`
	`   ReadText #301 "?Text"`
	`   If ?Text Eq "Login"`
	`      Break`
	`   EndIf`
	`Delay 100`
	`EndRepeat`

Item	Description

Example 2: Terminal Script
The terminal emulator screen is read and the content is searched for a successful login. (In this case, the application main menu appears.) After the user has logged in, the Repeat loop is broken and the script continues. If the login isn't successful, the script checks again. Terminal emulators use Repeat loops for error handling and Break to break out of the loop as appropriate.

```
# Initial System Login
WaitForText "ogin:"
Type $Username
Type @E
WaitForText "assword:"
Type $Password
Type @E
Delay 500

# Repeat loop for error handling
Repeat

#Check to see if password has expired
   If -Text "EMS: The password has expired."
      ChangePassword #Password
      Type $Password
      Type @E
      Type $Password
      Type @e
   EndIf

#User has an invalid Username or Password stored.
   If -Text "Login Failed"
      DisplayVariables "The username or password stored by
SecureLogin is invalid. Verify your credentials and try
again. IT x453."
      Type $Username
      Type @E
      Delay 500
      WaitForText "assword:"
      Type $Password
      Type @E
      Delay 500
   EndIf

# Account is locked for some reason, possibly inactive.
   If -Text "Account Locked"
      MessageBox "Your account has been locked, possibly
because of inactivity for 40 days. Contact the administrator
at x453."
   EndIf

# Main Menu, user has logged in successfully.
   If -Text "Application Selection"
      Break
   EndIf

Delay 100
EndRepeat
```

Call

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows

Item	Description
SecureLogin Version:	2.5
Type:	Flow control
Usage:	Call *Subroutine*
Arguments:	
Subroutine	The name of the subroutine to be called. This name must be identical to the name specified in the Sub command.
Description:	Calls and runs a subroutine. When a subroutine is called, the script begins executing from the first line of the subroutine. When the subroutine completes, the script resumes executing from the command immediately following the call command.
Example: **Terminal Script** If the word Username is found on the screen, the subroutine "Login" is launched. If "Wrong Password" is found, the subroutine "WrongPassword" is launched. Subroutines are particularly useful when you would otherwise need to repeat the same lines of script.	See the script below.

```
Repeat
   If -Text "Username"
      Call "Login"
   EndIf

   If -Text "Wrong Password"
      Call "WrongPassword"
   EndIf

Delay 100
EndRepeat

# Login Subroutine
Sub Login
   Type $Username
   Type @E
   Type $Password
   Type @E
EndSub

# Wrong Password Subroutine
Sub WrongPassword
   DisplayVariables "The password entered is incorrect.
Verify your password and click OK to retry logging in. IT
x453." $Password
   Call Login
EndSub
```

ChangePassword

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	All
Type:	Action
Usage:	ChangePassword *Variable* [Text] [Random]

Item	Description
Arguments:	
Variable	A normal or runtime variable that the new password is stored in.
[Text]	The text you want displayed in the change password dialog box.
[Random]	Invokes the random password generator.
Description:	Allows a single variable to be changed. Use this command in scenarios where password expiration is an issue. The *Variable* will be set to the new password. The flag for this command is Random. If Random is set, the new password will be generated automatically in compliance with the variable's password policy. If Random is not set, a dialog box prompts the user to enter a new password. The new password is tried against any variable password policies that are in place. Also see "RestrictVariable" on page 83.
Syntax Examples:	ChangePassword $NewPassword ChangePassword ?NewPassword "Enter a new password" ChangePassword ?NewPassword Random
Example: **Windows Script** The script detects the change password event. The application requires the current username and password, then the new password and confirmation of the new password. The script creates a backup of the old password in case the password change fails (which can be detected via the message that pops up). The script then generates and enters a new password.	See code below

```
# Change Password Dialog Box
Dialog
   Class #32770
   Title "Change Password"
EndDialog

Set $PasswordBackup $Password
Type $Password #1015
ChangePassword $Password Random
Type $Password #1005
Type $Password #1006
Click #1

# Change Password Failed Dialog Box
Dialog
   Class #32770
   Title "Change Password Failed"
EndDialog

# Set the password back as the password change failed
Set $Password $PasswordBackup
MessageBox "The change password process failed. Retry the
password change at your next login. IT x453."
```

Class

Item	Description
Use with:	Startup scripts, Windows
SecureLogin Version:	All
Type:	Dialog specifier
Usage:	Class *Window-Class*

Item	Description
Arguments:	
Window-Class	A string specifying the window class that this statement will match.
Description:	When a window is created, it is based on a template known as a window class. The Class command checks to see if the class of the newly created window matches its *Window-Class* argument. If the window matches the *Window-Class* argument, the execution of the script continues to the next line. If the window doesn't match the *Window-Class* argument, execution continues at the next dialog statement. You can determine the class by using Window Finder. See "Finding Control IDs" on page 32. In any Dialog statement, place the Class command before the Title command.

Example:
Windows Script
The dialog box generated by the application is checked to determine if the Window Class is #32770. If True and its title is "Login", that section of the script executes. If False, the script checks the next Dialog block.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

ClearPlat

For each dialog block in a script, the chosen User ID is reset and must therefore be reselected, either via a SetPlat command or by having the user reselect it from a list.

When an application first presents a login screen, SecureLogin directs the user to select an appropriate User ID from a list. SecureLogin enters the selected User ID's credentials into the application and submits them.

If the login fails due to incorrect credentials, SecureLogin prompts the user to change the credentials. SecureLogin doesn't retain User ID details and prompts the user to re-enter them. However, this could result in the user changing the wrong credentials if the user selects the incorrect User ID.

To resolve this issue, use the SetPlat, ReLoadPlat and ClearPlat commands. ReloadPlat sets the current User ID to the one which was last chosen (for the given application), or leaves the User ID unset if a User ID hasn't been selected previously. ClearPlat resets the last chosen User ID.

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	3.51.1
Type:	Action

Item	Description
Usage:	To use the ClearPlat command, add code to three places: **Application Startup.** When an application first starts up, the previously chosen platform should be cleared via ClearPlat. (In a Windows application, add an extra dialog statement for the main window). **Change Credentials Canceled.** If the user decides not to modify the chosen platform's credentials, call ClearPlat. This gives the user a chance to choose a different platform next time. **Successful Login.** Call ClearPlat to allow the user to relogin with a different User ID at a later stage.
Arguments:	None
Description:	Resets the last-chosen User ID, causing subsequent calls to ReLoadPlat to do nothing.
Example: Windows Script	

```
# ==== BeginSection: Application startup ====
Dialog
  Class "#32770"
  Title "Password Test Application"
EndDialog

ClearPlat
# ==== EndSection: Application startup ====

#  ==== BeginSection: Login ====
Dialog
  Class "#32770"
  Title "Login"
  Ctrl #1001
EndDialog

ReLoadPlat
SetPrompt "Username =====>"
Type $Username #1001
SetPrompt "Password =====>"
Type $Password #1002
SetPrompt "Domain =====>"
Type $Domain #1003
Click #1
# ==== EndSection: Login ====

# ==== BeginSection: Login Successful ====
Dialog
  Class "#32770"
  Title "Login Successful"
EndDialog

ClearPlat

Click #2
# ==== EndSection: Login Successful ====
```

Item	Description

	`# ==== BeginSection: Login Failure ====`
	`Dialog`
	`  Class "#32770"`
	`  Title "Login Failure"`
	`EndDialog`
	
	`Click #2`
	`ReLoadPlat`
	`OnException ChangePasswordCancelled Call ChangeCancelled`
	`  ChangePassword $password`
	`ClearException ChangePasswordCancelled`
	`Type -Raw \Alt+F`
	`Type -Raw L`
	`# ==== EndSection: Login Failure ====`
	
	`# ==== BeginSection: Change Credentials Canceled ====`
	`Sub ChangeCancelled`
	`  ClearPlat`
	`  EndScript`
	`EndSub`
	`# ==== EndSection: Change Credentials Canceled ==`

Click

Item	Description
Use with:	Java, Web, Windows
SecureLogin Version:	All
Type:	Action
Windows Usage:	
Usage 1	Click #*Ctrl-ID* [-Raw] [-Right]
Usage 2	Click #*Ctrl-ID* [-Raw] [-x *X Coordinate* -y Y *Coordinate*]]
Web Usage:	Click #*Number*
Arguments:	
#Ctrl-ID	The ID number of the control to be pressed.
[-Raw]	Eliminates the mouse and sends a direct click.
[-Right]	Sends a right-mouse click. Use this argument with the -Raw flag only.
X_Coordinate	Represents the horizontal coordinate relative to the client area of the application (not the screen).
Y_Coordinate	Represents the vertical coordinate relative to the client area of the application (not the screen).

Item	Description
#Number	The pound or hash symbol followed by the sequential number or Control ID of the button to be pressed. **Web-Specific:** The number of the button is determined by the Web page layout. See "DumpPage" on page 55. **Windows-Specific:** The control ID. Use the Window Finder to discover the number. **Java-Specific:** The index to use is put in an example script that the Java wizard creates.

Description:

When used with Windows applications, the Click command sends a click instruction to the specified *#Ctrl-ID*. If the button to be clicked doesn't have a control ID, the Type \N command will often click the default button in a Windows application.

The -Raw flag can be set if the button or control doesn't respond to the Click command. The -Raw flag causes SecureLogin to emulate the mouse and send a direct click message to the control. Using the -Right flag with the -Raw flag sends a right-click to the control.

Setting the *#Ctrl-ID* to 0 (zero) sends the Click command to the window that the script is running on.

If -Raw is specified, you can also set the X and Y coordinates. These coordinates are relative to the client area of the application, not the screen.

When used with Web pages, the Click command takes a single argument, which is the sequential number on the page of the button to be pressed. "Click #3" clicks the third button on the page. Keep in mind that, because of Web page layout and design, the sequential order of the buttons might not be obvious. In this case, you might need to use the DumpPage command to discover the field layout.

Syntax Examples:

Click #1
Click #1 -Raw -Right
Click -*X* 12 -*Y* 24

Example 1:
Windows Script
The Login dialog is detected, the username and password are entered, and button number 1 (in this case the Login button) is clicked.

```
# Login Dialog Box
Dialog
   Class #32770
   Title "Login"
EndDialog

Type $Username #1001
Type $Password #1002
Click #1
```

Example 2:
Web Script
The username and password are entered, then the Login button is clicked.

```
Type $Username
Type $Password Password
Click #1
```

Item	Description

Example 3: Windows Script In this example, the application is Java. Therefore, there is no Control ID. Instead, the click command is told to click a particular place on the window.	`#Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`End Dialog`
	
	`Type $Username`
	`Type $Password`
	`Click -X 12 -Y 24`

ConvertTime

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	3.0.4
Type:	Variable manipulator
Usage:	ConvertTime *time String Time*
Arguments:	
String Time	The output variable.
Description:	Converts a numeric time value, for example, ?CurrTime(system) into a legible format and stores it in *String Time*.
Example: Windows Script Converts the time to a readable format and displays it in a dialog box.	# Login Dialog Box Dialog Class #32770 Title "Login" End Dialog ConvertTime ?CurrTime ?Time(system) ?Time MessageBox ?Time

Ctrl

Item	Description
Use with:	Java, startup scripts, Windows
SecureLogin Version:	All
Type:	Dialog specifier
Usage:	Ctrl #*Ctrl-ID* [*Regular Expression*]

Item	Description
Arguments:	
#Ctrl-ID	The ID number of the control to be checked.
[*RegEx*]	The regular expression.
Description:	Determines if a window contains the control expressed in the *#Ctrl-ID* argument. The control ID number is a constant that is established at the time a program is compiled. **NOTE:** Third-party software control ID numbers might not be consistent from one version to the next. You can use the Window Finder tool to determine the control ID number. See "Finding Control IDs" on page 32. Using the [*RegEx*] argument adds a further check that allows the script to skip to the next command. If the text on the specified *#Ctrl-ID* doesn't conform to the [*RegEx*], the script skips to the next dialog statement as though the *#Ctrl-ID* didn't exist.
Syntax Examples:	Ctrl #1 Ctrl #1 "OK"

Example:
Windows Script
The dialog box is tested to see if it contains the correct Control IDs with the correct values. If any of the Control IDs are missing, or the text doesn't match, the script passes on to the next dialog block.
	`# Login Dialog Box`
	`Dialog`
	`   Title "Login"`
	`   Ctrl #1 "OK"`
	`   Ctrl #2 "Cancel"`
	`   Ctrl #3 "Help"`
	`EndDialog`
	
	`Type $Username`
	`Type \T`
	`Click #1`

Delay

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	Delay *Time Period*
Arguments:	
Time Period	A period of time, expressed in milliseconds (1/1000 of a second), to pause execution of the script.

Item	Description
Description:	Delays the action of the script for the time specified in the *Time Period* argument. The time specified in the *Time Period* argument is noted in milliseconds. For example, Delay 5000 creates a 5-second pause. Use the Delay command to accommodate an introduction screen or some other custom feature. To optimize SecureLogin's performance, use the Delay command in all Repeat loops.

Example:
Windows Script
The login box is detected. However, the script waits half a second before acting upon it to ensure that the box is complete.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Delay 500`
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

Dialog / EndDialog

Item	Description
Use with:	Java, Windows
SecureLogin Version:	All
Type:	Dialog specifier
Usage:	Dialog EndDialog
Arguments:	None
Description:	Identifies the beginning and end of a dialog specification block. Use these commands to construct a dialog specification block, which consists of a series of dialog specification statements (for example, Ctrl, Title). When a dialog block is executed, each of the dialog specification statements is executed in sequence. If any statement within the dialog block is not found, the entire dialog block is considered false and execution proceeds to the next dialog block, if any. You need to specify enough information in the dialog block to make the dialog box unique (for example, Log In or Change Password). The part of the script that follows the EndDialog command is called the script body. Another dialog block, or the end of the script, terminates the script body.

Item	Description

Example: Windows Script The dialog box is tested to determine its identity. If it is determined to be the login box, the script parses the Type and Click commands to complete the login process.	`# Login Dialog Box`
	`Dialog`
	`   Title "Login"`
	`   Ctrl #1 "OK"`
	`   Parent`
	`      Title "Application 1"`
	`   EndParent`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

DisplayVariables

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	DisplayVariables [*User Prompt*] [*Variable* [*Variable*]...]
Arguments:	
[*User Prompt*]	Optional, customized text to be displayed in the Enter SecureLogin Variables dialog box.
[*Variables*]	The name of the variables you want the user to be prompted for. If you don't specify the name of the variables, SecureLogin prompts for all variables that the script uses.

Item	Description
Description:	Displays a dialog box that lists the user's stored variables (for example, $Username and $Password) for the current application. The user can edit the variables from this dialog box. For example, if the login is unsuccessful because of an incorrect username or password, the DisplayVariables command prompts the user to edit the stored username or password values. From that point, the login process proceeds as usual. You can specify a particular variable to display. If the *variables* parameter is specified, DisplayVariables prompts only for the variables specified. To replace the default prompt text in the Enter SecureLogin Variables dialog box, enter the replacement text in quotation marks after the DisplayVariables command. Limit the text to 90 characters. If no variables are stored for the user the first time SecureLogin attempts to apply single sign-on to the application, the prompt will not be customized. After variables are stored for the user, the prompt is customized when the script is run. You can also customize the text in the prompt by using the SetPrompt command. See "SetPrompt" on page 93. **TIP:** You can use the OnException EnterVariablesCancelled command to prevent a user from canceling the DisplayVariables prompt.
Syntax Examples:	DisplayVariables DisplayVariables "Enter your details" DisplayVariables "Enter a new password" $Password DisplayVariables "Enter your username and password" $Username $Password DisplayVariables "" $Username $Password

Example:
Windows script
The Wrong Password dialog box is detected. SecureLogin prompts the user to enter a new username and password for it to use. After these have been specified, SecureLogin enters them into the dialog box and clicks OK.
	`# Wrong Password Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Wrong Password"`
	`EndDialog`
	
	`DisplayVariables "Enter a new username and password"`
	`$Username $Password`
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

Divide

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	3.0
Type:	Variable manipulator

Item	Description
Usage:	Divide *Variable1 Variable2* [?Result]
Arguments:	
Variable1	The dividend. The first argument. The number that will be divided by the second argument. This argument will contain the result if the optional [?Result] argument is not passed in. If you use the *Variable1* argument without the [?Result] argument, *Variable1* must be a SecureLogin variable (either ?Variable1 or $Variable1). Otherwise, *Variable1* can be any numeric value.
Variable2	The divisor. The second argument. The number that the first argument is divided by. The *Variable2* argument can be a SecureLogin variable or a numeric value.
[?Result]	The quotient or result of the equation.
Description:	Divides one whole number by another. (Doesn't divide fractions or give results in fractions.) The numbers can be hard-coded into the script, or they can be variables. The result can either be output to another variable or to one of the original numbers. **NOTE:** This is an integer arithmetic that is 5/2, not 2.5.
Syntax Examples	Divide "1" "2" ?Result Divide ?LoginAttempts ?LoginFailures Divide ?LoginAttempts ?LoginFailures ?Result Divide ?LoginAttempts "3" Divide ?LoginAttempts "3" ?Result

Example:
Windows Script
The values of Control IDs 103 and 104 are read into variables. From there they are divided and typed into Control ID 1.
	`ReadText #103 ?Number1`
	`ReadText #104 ?Number2`
	`Divide ?Number1 ?Number2 ?Result`
	`Type ?Result #1`

DumpPage

Item	Description
Use with:	Advanced Web Script
SecureLogin Version:	3.5
Type:	Action
Usage:	DumpPage *Variable*
Arguments:	
Variable	The string variable to receive the page information.
Description:	Provides information about the current Web page. This information can be useful for debugging scripts for a Web page.

Item	Description

Example:	`DumpPage ?dump`
	`MessageBox ?dump`

EndScript

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	All
Type:	Action
Usage:	EndScript
Arguments:	None
Description:	Immediately terminates execution of the script.
Example: **Windows Script** The login box is detected. SecureLogin enters the username and password and clicks OK. If the "Incorrect Password" message is detected, SecureLogin tells the user that the password was incorrect and terminates the script.	see code below

```
Dialog
   Title "Login Failure"
   Ctrl #1
EndDialog

ReadText #65535 ?ErrorMsg
If "Incorrect Password" -In ?ErrorMsg
   MessageBox "You have entered an incorrect password"
   EndScript
EndIf
```

Event

Item	Description
Use with:	Windows
SecureLogin Version:	3.5
Type:	Dialog specifier
Usage:	Event *Event*
Arguments:	
Event	The application event to monitor. This corresponds to a Windows event, which usually begins with WM_. For a list of events that you can specify, see Appendix E, "Event Specifiers," on page 141. For information on Windows events, see http://msdn.microsoft.com.

Item	Description
Description:	Scripts generally execute when an application window is created. This timing corresponds to the WM_CREATE message that is received from an application window at startup. By adding the Event specifier to a dialog block, you can override this behavior, so that a script now executes when (and only when) the specified message is generated. If no Event specifier is given, it is equivalent to "Event WM_CREATE". You can apply the Event specifier only within a Dialog and EndDialog statement block. Also, specify only one Event per Dialog block. If there is a requirement to monitor for multiple events, each must be specified within its own Dialog block. For further information, refer to MSDN or other documentation on the Win32 messaging system. Microsoft's Spy++ or similar Windows message spy tools are useful for trapping event names in specific windows.
Syntax Examples:	Dialog Class "someclass" Event WM_ACTIVATE EndDialog Messagebox "Caught the WM_ACTIVATE message"

GetCheckBoxState

Item	Description
Use with:	Advanced Web Script
SecureLogin Version:	3.5
Type:	Action
Usage:	GetCheckBoxState *Item Number Variable*
Arguments:	
Item Number	The Windows control ID of the check box.
Variable	The target variable for the status of the specified check box. The value returned will be Checked or Unchecked. The variable can be either a ? or a $ variable.
Description:	Returns the current state of the specified check box.

Example:.	`GetCheckBoxState #25 ?state1`
	`GetCheckBoxState #26 ?state2`
	`Messagebox ?state1`
	`Messagebox ?state2`

GetCommandline

Item	Description
Use with:	Startup scripts, Windows
SecureLogin Version:	3.0.4
Type:	Action
Usage:	GetCommandline *Variable*
Arguments:	
Variable	Defines where the captured command line will be stored.
Description:	Captures the full command line of the program that is loaded and saves it to the specified variable. **TIP:** You can use GetCommandLine to detect and differentiate back-end systems or databases for use with multiple logins in the SAP application. This command isn't supported under Windows 95/98.

Example:
Windows script
The command line of the application is read, then tested to see if it is Notepad.exe. If it is, Notepad is closed. If it isn't, the script ends.
	`GetCommandline ?Text`
	`If ?Text Eq "C:\Winnt\Notepad.exe"`
	`   Killapp Notepad.exe`
	`EndIf`

GetEnv

Item	Description
Use with:	All
SecureLogin Version:	3.5
Type:	Action
Usage:	GetEnv *envvar variable*
Arguments:	
Envvar	The environment variable name that you want to retrieve.
Variable	Defines where the retrieved environment variable data will be stored.
Description:	Reads the value of an environment variable and saves it in the specified *variable*.

Item	Description

Example: Windows Script	`GetEnv "SESSIONNAME" ?SessionName`
	`If ?SessionName eq "console"`
	`  MessageBox "Running from Citrix Server Console"`
	`EndIf`

GetIni

Item	Description
Use with:	Java, Terminal Launcher, Web, Windows
SecureLogin Version:	3.5
Type:	Action
Usage:	GetIni *ini file section key variable*
Arguments:	
Ini file	The filename that you want to read the section or key from.
section	The name of the section that contains the key name.
key	The name of the key that is to be read.
Variable	Defines where the retrieved environment variable data is stored.
Description:	Allows reading data from the .ini file.

Example: Windows Script	`GetIni "c:\program files\lotus\notes\notes.ini"`
	`"Notes".`
	`"KeyFileName ?NotesDefaultIDFile`
	`SetPlat ?NotesDefaultIDFile`

GetReg

Item	Description
Use with:	All
SecureLogin Version:	3.5
Type:	Action
Usage:	GetReg *regentry variable*
Arguments:	
Regentry	The registry entry that you want to read.
Variable	Defines where the retrieved environment variable data will be stored.

Item	Description
Description:	Reads data from the registry and saves it in the specified variable. The registry entry input needs to be in the following format: HIVE\KEY\Value Valid hives are: "HKCR"HKEY_CLASSES_ROOT "HKCC"HKEY_CURRENT_CONFIG "HKCU"HKEY_CURRENT_USER "HKLM"HKEY_LOCAL_MACHINE "HKU"HKEY_USERS

Example:
Windows Script
	`GetReg "HKLM\Software\ABCCorp\ProductID" ?ProductID`
	
	`If ?ProductID noteq "xxxxxxxxxx"`
	`  #Not corporate desktop`
	`  EndScript`
	`EndIf`

GetSessionName

Item	Description
Use with:	Terminal Emulator
SecureLogin Version:	3.5
Type:	Action
Usage:	GetSessionName *?variable*
Arguments:	
Variable	The target variable that the session name is copied into.
Description:	Finds the current HLLAPI session name that is being used to connect and returns it to the specified variable.
Example: **Windows Script**	GetSessionName ?Session_name

GetText

Item	Description
Use with:	Terminal Launcher, Web
SecureLogin Version:	3.0
Type:	Action
Usage:	GetText *Variable*

Item	Description
Arguments:	
Variable	Defines where the captured text will be stored.
Description:	Gets all of the text from the screen and saves it to the specified variable. GetText is used in a large Web script that might contain several If -Text statements. Under Netscape, each If-Text statement scans the screen to find the specified text. Each scan of the screen results in the screen flashing. However, if you use GetText (for example, If ?Text -In ?FromGetText), the script can contain multiple If-Text commands, with only one scan of the screen.

Example:
Web Script
The text content of the Web page is copied into the ?Text variable. SecureLogin tests for the presence of "Login." If it exists, SecureLogin enters the credentials and submits them automatically.
	`GetText ?Text`
	`If "Login" -In ?Text`
	`   Type $Username`
	`   Type $Password Password`
	`EndIf`

GetURL

Item	Description
Use with:	Web
SecureLogin Version:	3.0
Type:	Action
Usage:	GetURL *Variable*
Arguments:	
Variable	Defines where the captured URL will be stored.
Description:	Captures the URL of the site that is loaded and saves it to the specified variable.

Example:
Web Script
The URL of the Web site is copied into the ?URL variable and tested to see if it matches text being searched for. If it does, SecureLogin pops up a message box and redirects the user to the Intranet.
	`GetURL ?URL`
	`If "Logout" -In ?URL`
	`  MessageBox "You have chosen to log out of the applications. You will now be redirected to the Intranet home page."`
	`   GoToURL "http://Intranet"`
	`EndIf`

GotoURL

Item	Description
Use with:	Web
SecureLogin Version:	2.5
Type:	Action
Usage:	GotoURL *URL* [*-frame*]
Arguments:	
URL	The URL that the browser will navigate to.
-frame	Opens the URL in the frame that started the script.
Description:	Makes the browser navigate to the specified *URL*. By default, the command opens the new Web page in the main window, rather than the frame that started the script. When you use the -frame option on a framed Web page, the URL redirect occurs only in the current frame rather than in the parent window. You must specify http:// before the URL.

Example:
Web Script
SecureLogin detects an incorrect password message, displays a message box informing the user, then browses to the Novell Web site.
	`If -text "Incorrect Password"`
	`   MessageBox "You have entered an incorrect password"`
	`   GotoURL "http://www.novell.com"`
	`EndIf`

If / Else / EndIf

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	All
Type:	Flow control
Usage 1:	If *Value1 Gt/|Lt* V*alue2* #Do This [Else] #Do This Endif
Usage 2:	If *Value1 Eq|NEq* V*alue2* [-I|-S #Do This [Else] #Do This Endif

Item	Description
Usage 3:	If *Value1* [-In|-NotIn *Value2* [-I|-S] #Do This Else #Do This EndIf
Usage 4:	If -text [-frame] *Text* #Do This [Else] #Do This EndIf
Usage 5:	If -exists *Variable* #Do This [Else] #Do This EndIf
Arguments:	
Value1	The left hand side of the expression to be evaluated.
Value2	The right hand side of the expression to be evaluated.
Text	The text that will be searched for.

Item	Description
Description:	Establishes a block to be executed if the expression supplied is found to be true. The Else command works inside an If block. This command is executed if the operator in the If block is false. The EndIf command terminates the If block. The If command supports the following text comparison operators: ◆ Eq/SEq Evaluates to true if the left-hand side is equal to the right-hand side. ◆ NEq/SNEq Evaluates to true if the left-hand side is not equal to the right-hand side. ◆ -In/-SIn Evaluates to true if the left-hand side is a substring of the right-hand side. ◆ -NotIn/-SNotIn Evaluates to true if the left-hand side is not a substring of the right-hand side. When using these text comparison operators, you can optionally specify whether the comparison is to take into account the case of the strings being compared. If -I is specified, the comparison will be case insensitive. If -S is specified, the comparison will be case sensitive. By default the Eq and NEq operators are not case sensitive, while the -In and -NotIn operators are case sensitive. The If command supports two numerical comparison operators: ◆ Gt/Lt Evaluates to true if the left-hand side is greater than /less than the right-hand side. Because this is a numerical comparison, the right-hand side and left-hand side must be numbers. The operator -exists checks for a stored variable. If the specified variable exists, the comparison evaluates to true. The operator -Text is supplied to directly query the application being scripted for a particular string. -Text evaluates to true if the specified text is found in the application windows of the application being scripted. For IE scripts, an optional argument -Frame can be supplied. -Frame restricts the command to looking for the specified text in the current frame.
Syntax Examples:	If ?Value1 Gt ?Value2 If -Text "Login" If -Exists $RunBefore If "Login" -In ?Text

Item | **Description**

Example 1:
Web Script
SecureLogin tests for "Incorrect Password". If it is found, an incorrect password message box is displayed. If the error message isn't found, SecureLogin logs in as normal.

```
If -Text "Incorrect Password"
   DisplayVariables "You have entered the incorrect password.
Verify it and try logging in again."
Else
   Type $Username
   Type $Password Password
EndIf
```

Example 2:
Windows Script
Each time the script is run, a variable is incremented. This is used to count the number of times the dialog box has been displayed. If it is displayed more than three times, the application is closed. If the login is successful, the count is reset.

```
# Login Dialog Box
Dialog
   Class #32770
   Title "Login"
EndDialog

ReadText #1001 ?Username

If -Exists $Username
Else
   Set $Username ?Username
EndIf

Increment ?RunCount
If ?RunCount Gt "3"
   MessageBox "Login has been attempted too many times. The
application will be closed."
   KillApp "app.exe"
Else
   Type $Username #1001
   Type $Password #1002
   Click #1
EndIf

# Login Successful Dialog Box
Dialog
   Title "Login Successful"
   Ctrl #1
EndDialog

Set ?RunCount "0"
```

Example 3:
Web Script
The text content of the Web page is copied to ?WebText. The variable is then tested to see if "Login" is present. If it is, SecureLogin performs the login process. If it isn't, the script is terminated.

```
GetText ?WebText
If "Login" -In ?WebText
   Type $Username
   Type $Password Password
Else
   EndScript
EndIf
```

Item	Description

Example 4: Startup Script When SecureLogin loads, it tests to see whether the user has run SecureLogin before. If the user hasn't, SecureLogin sets the variable so that the message is displayed only once. SecureLogin then displays a welcome message along with the option for further details on SecureLogin.	
	```
	If -Exists $LoadedBefore
	  EndScript
	Else
	  MessageBox  "Welcome to SecureLogin, a new password management tool that will save you the hassle of remembering your passwords. Would you like more details on how to use SecureLogin and what it can do for you?" -YesNo ?Result
	  Set $LoadedBefore "Yes"
	  If ?Result Eq "Yes"
	    GoToURL "http://www.company.com/SecureLoginDetails.htm"
	  EndIf
	EndIf
	```

Include

Item	Description
Use with:	All
SecureLogin Version:	3.0
Type:	Flow control
Usage:	Include *Platform-Name*
Arguments:	
Platform-Name	The name of the script to be included.
Description:	Allows commonly-used application script code to be shared by multiple applications. The script identified by *Platform-Name* is included at execution time into the calling application script. The script included with the Include command must comprise commands supported by the calling application.

Example: Windows Script SecureLogin detects the login dialog, executes the notepad.exe script, then enters the user's credentials.	
	```
	# Login Dialog Box
	Dialog
	   Class #32770
	   Title "Login"
	EndDialog

	Include Notepad.exe
	Type $Username #1001
	Type $Password #1002
	Click #1
	```

Increment / Decrement

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Variable manipulator
Usage:	Increment *Variable* Decrement *Variable*
Arguments:	
Variable	The name of the variable to increase or decrease in value.
Description:	Adds or subtracts from a specified variable. You can use Increment and Decrement to count the number of passes a particular script has made. After the number of instances is equal to the specified number, you can instruct the script to run another task or end the script. This instruction can be particularly useful in the following situations: ◆ When you configure an application whose login panel is similar to other windows within the application. ◆ To easily control the number of attempts a user can have to access an application.
Syntax Examples:	Increment ?RunCount Decrement ?RunCount
Example: **Windows Script** Each time the script is run, a variable is incremented. This is used to count the number of times the dialog box has been displayed. If it is displayed more than three times, the application is closed. If the login is successful, the count is reset.	See code below

```
# Login Dialog Box
Dialog
   Class #32770
   Title "Login"
EndDialog

Increment ?RunCount
If ?RunCount Gt "3"
   MessageBox "Login has been attempted too many times. The
application will be closed."
   KillApp "app.exe"
Else
   Type $Username #1001
   Type $Password #1002
   Click #1
EndIf

# Login Successful Message
Dialog
   Title "Login Successful"
   Ctrl #1
EndDialog

Set ?RunCount "0"
```

KillApp

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	KillApp *Process-Name*
Arguments:	
Process-Name	The name of the process that will be terminated.
Description:	Terminates an application.

Example:
Windows Script
Each time the script is run, a variable is incremented. This is used to count the number of times the dialog box has been displayed. If it is displayed more than three times, the application is closed. If the login is successful, the count is reset.

```
# Login Dialog Box
Dialog
   Class #32770
   Title "Login"
EndDialog

Increment ?RunCount
If ?RunCount Gt "3"
   MessageBox "Login has been attempted too many times. The
application will be closed."
   KillApp "app.exe"
Else
   Type $Username #1001
   Type $Password #1002
   Click #1
EndIf

# Login Successful Message
Dialog
   Title "Login Successful"
   Ctrl #1
EndDialog

Set ?RunCount "0"
```

Local

Item	Description
Use with:	All
SecureLogin Version:	3.0
Type:	Variable manipulator
Usage:	Local *?Variable*

Item	Description
Arguments:	
?Variable	The runtime variable that will be declared as local.
Description:	Declares that a runtime variable will only exist for the lifetime of the script. Use local runtime variables the same way as normal runtime variables, and still write local runtime variables as ?Variable. Declare local runtime variables to be local by using the Local command, followed by the variable name. When runtime variables are declared local, they cannot be set back again. You can declare a runtime variable to be local at any time in a script. Using local runtime variables slightly increases the performance of SecureLogin. Use local runtime variables to run scripts multiple times and not have the runtime variables stored between each run of the script. Also use local runtime variables to prevent runtime variables from overwriting each other. Overwriting could happen if two instances of a script are running at the same time. For example, use the Local command if two instances of Terminal Launcher are running, each instance running the same script but attached to different emulator sessions.

Example:
Windows Script
A variable is declared local, then used to count the number of times a dialog box has been displayed. If the box has been displayed too many times, SecureLogin alerts the user, then closes the application.
	`# Invalid Login Message`
	`Dialog`
	`   Class #32770`
	`   Title "Login Failure"`
	`EndDialog`
	
	`Local ?RunCount`
	`Increment ?RunCount`
	`If ?RunCount Gt "5"`
	`   MessageBox "Closing Application"`
	`   KillApp "PasswordText.exe"`
	`EndIf`
	`Type $Username`
	`Type $Password`

MessageBox

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	All
Type:	Action
Usage:	MessageBox *Data* [-Background] [-DefaultNo] [-YesNo *Variable*] [-YesNoCancel ?*Variable*]

Item	Description
Arguments:	
Data	The text to be displayed to the user. can be several strings, variables or a combination of the two.
[-Background]	When specified, allows the user to open an application and work in that application, without having to respond to the MessageBox. If this parameter isn't used, the MessageBox remains the topmost window and the user must respond to the MessageBox before continuing with any other work.
[-DefaultNo]	An optional parameter, used only with the -YesNo and -YesNoCancel flags. When the -DefaultNo parameter is set, default focus goes to the No button instead of to the Yes button.
[-YesNo]	Allows the user to select either Yes or No within the message box rather than being limited to an OK button only.
?Variable	Required with the -YesNo or -YesNoCancel flag to store the result of the user action.
[-YesNoCancel]	Allows the user to select either Yes, No, or Cancel when a message box is presented.
Description:	Displays a dialog box that contains the text specified in the *Data* variable. The script is suspended until the user reacts to this message. As the following line illustrates, MessageBox can take any number of text arguments, including variables: `MessageBox "The User "$Username" has just been logged into the system”` You can set the -YesNo flag when calling a MessageBox. If the -YesNo flag is set, the MessageBox prompts the user with a box that has a Yes and a No button rather then an OK button. You can capture the result of the MessageBox immediately after the flag by using a runtime *?Variable*. The variable value is set to Yes, No, or Cancel.
Syntax Examples:	MessageBox "Script completed successfully” MessageBox "Do you want to continue?” -YesNo ?Result MessageBox "Do you want to continue?” -YesNoCancel ?Result -Background -DefaultNo

Item	Description

Example 1: Windows Script SecureLogin detects the change password dialog box, asks the user whether the user wants to change the password, and informs the user that the change was successful.	
	```
	# Change Password Dialog Box
	Dialog
	   Class #32770
	   Title "Change Password"
	EndDialog

	MessageBox "Your password has expired. Would you like to change it now?" -YesNo ?Result

	If ?Result Eq "Yes"
	   Type $Username #1015
	   Type $Password #1004
	   ChangePassword $Password Random
	   Type $Password #1005
	   Type $Password #1006
	   Click #1
	    MessageBox "Password changed successfully"
	Else
	   Click #2
	   MessageBox "You elected not to change your password."
	EndIf
	```

Example 2: Terminal Launcher Script Message boxes can be useful when troubleshooting scripts. You can display a box before each step in the script, to enable you to see where the script fails to execute. **NOTE:** The WaitForText command cuts off the first character because it will find both Password and password and respond to all password entry points.	
	```
	MessageBox "Beginning wait for Login prompt"
	WaitForText "ogin:"
	MessageBox "Login detected. Now entering Username."
	Type $Username
	MessageBox "Username entered. Now simulating Enter."
	Type @E
	MessageBox "Enter has been simulated. Now waiting for Password"
	WaitForText "assword:"
	MessageBox "Password detected. Now entering Password."
	Type $Password
	MessageBox "Password entered. Now simulating Enter."
	Type @E
	MessageBox "Sequence completed. The user should now be logged in"
	```

Multiply

Item	Description
Use with:	All
SecureLogin Version:	3.0
Type:	Variable manipulator
Usage:	Multiply *Variable1 Variable2* [?Result]

Item	Description
Arguments:	
Variable1	The multiplicand. The first argument. The whole number (but not a fraction) that will be multiplied by the second argument. This argument will contain the result if the optional [?Result] argument is not passed in. If you use the *Variable1* argument without the [?Result] argument, *Variable1* must be a SecureLogin variable (either ?Variable1 or $Variable1). Otherwise, *Variable1* can be any numeric value.
Variable2	The multiplier. The second argument. The number that the first number will be multiplied by. *Variable2* can be a SecureLogin variable or a numeric value.
[?Result]	Optional. The product or result of the equation.
Description:	Multiplies one whole number by another. (Doesn't multiply fractions.) The numbers can be hard-coded into the script, or they can be variables. The result can be output to another variable or to one of the original numbers.
Syntax Examples:	Multiply "1" "2" ?Result Multiply ?LoginAttempts ?LoginFailures Multiply ?LoginAttempts ?LoginFailures ?Result Multiply ?LoginAttempts "3" Multiply ?LoginAttempts "3" ?Result

Example:
Windows Script
The values of control IDs 103 and 104 are read into variables. From there they are multiplied, then typed into control ID 1.
	`ReadText #103 ?Number1`
	`ReadText #104 ?Number2`
	`Multiply ?Number1 ?Number2 ?Result`
	`Type ?Result #1`

OnException/ClearException

Item	Description
Use with:	All
SecureLogin Version:	3.0.4
Type:	Flow control
Usage:	OnException *Exception_Name* Call *SubRoutine* ClearException *Exception_Name*

Item	Description
Arguments:	
Exception Name	The name of the exception that you want to act on. Two exceptions are supported: ◆ ChangePasswordCancelled When a user clicks Cancel in the Change Password dialog box. ◆ EnterVariablesCancelled When a user clicks Cancel in the automatic variable prompt dialog box.
Subroutine	The name of the subroutine you want to run when the exception condition is found to be true.
Description:	Detects when certain conditions are met. This is when the Cancel button is clicked in either of two dialog boxes. When the condition is met, a subroutine is run. Use the ClearException command to reset the exceptions value.
Syntax Examples:	OnException ChangePasswordCancelled Call DisplayError ClearException ChangePasswordCancelled

Example 1: Windows Script
The login has failed because the user has invalid credentials stored. Provide the user with an opportunity to verify the username and password. If the user clicks Cancel, the exception is executed. The user must then enter credentials.
	`# Login Failed Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login Failed"`
	`EndDialog`
	
	`OnException EnterVariablesCancelled Call VariablesCancelled`
	`DisplayVariables "Verify your Username and Password and try again. Helpdesk x5555."`
	`ClearException EnterVariablesCancelled`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`
	
	`Sub VariablesCancelled`
	`   OnException EnterVariablesCancelled Call VariablesCancelled`
	`   DisplayVariables "You can’t cancel this verification dialog box. Verify your username and password when prompted. Then click OK to retry logging in."`
	`   ClearException EnterVariablesCancelled`
	`EndSub`

Item	Description

Example 2: Windows Script The user has been prompted to change the password. SecureLogin must handle password changes so that the password is updated both in the application and in the user's 3DES encrypted store (in the directory against the User object).	`# Change Password Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Change Password"`
	`EndDialog`
	
	`Type $Username #1005`
	`Type $Password #1006`
	`OnException ChangePasswordCancelled Call ForceChangePwd`
	`ChangePassword $Password "Enter a new password for the Human Resources application. IT x5555"`
	`Type $Password #1007`
	`Type $Password #1008`
	`ClearException ChangePasswordCancelled`
	
	`Sub ForceChangePwd`
	`   OnException ChangePasswordCancelled Call ForceChangePwd`
	`   ChangePassword $Password "You must enter a new password. You can’t cancel. IT x5555"`
	`   Type $Password #1007`
	`   Type $Password #1008`
	`   ClearException ChangePasswordCancelled`
	`EndSub`

Parent / EndParent

Item	Description
Use with:	Windows
SecureLogin Version:	All
Type:	Dialog specifier
Usage:	Parent EndParent
Arguments:	None

Item	Description
Description:	The Parent command begins a parent block in which the statements act upon a window's parent. The commands that follow the Parent command function identically to commands used in a dialog block. If they equate to False, the script ends. For example, the command Title in a Parent block returns False if the title of the Parent doesn't match the one specified in the command. However, if a command in a Parent block returns a False result, the execution doesn't skip to the next Parent block, as it would in a dialog block. Instead, the Parent block proceeds to the next dialog box, or the script terminates if no further dialog block exists. The EndParent command terminates a Parent block and sets the subject of the script back to the original window. You can nest the Parent command, allowing the parent block to act on the parent of the parent. The Parent command is particularly useful in applications where the dialog box (for example, Login Dialog Box) is the child of an open window, typically in the background. If you are unable to single sign-on to an application after enabling it with the Wizard, you typically need to specify Parent blocks. Also, you can use the Parent command to execute commands on a dialog's parent. For example, you can get a script to click a button on the parent window, as illustrated in Example 2. **TIP:** If you use the wizard or try to enable an application and it doesn't seem to be working, try using the Parent command. It is able to handle windows that are within windows.

Example 1: Windows Script The Parent command is used to further specify the dialog box that is used for logging in. In this case, the parent of the login box has a Class of "Centura:MDIFrame".	`# Login Dialog Box`
	`Dialog`
	`   Class "Centura:Dialog"`
	`   Title "Login"`
	`   Ctrl #4098`
	`   Ctrl #4100`
	`   Parent`
	`      Class "Centura:MDIFrame"`
	`   EndParent`
	`EndDialog`
	
	`Type $Username #4098`
	`Type $Password #4100`
	`Click #4101`

Example 2: Windows Script The Parent command is used to click a button on the Login window's parent.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Parent`
	`   Click #1`
	`EndParent`

PickListAdd

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	PickListAdd *Display-Text* [*Return-Value*]
Arguments:	
Display-Text	The text that will be displayed in the pick list for the specified option.
[Return-Value]	The value returned from the pick list. If you don't specify this parameter, the return will be the display text.
Description:	Allows users who have multiple accounts for a particular system to choose the account that they will log in to. Also, you can use this command set to choose from multiple sessions on one mainframe account. In fact, you can use PickList to build a list of databases, phone numbers, or any list you need your user to choose from. You can then set Variables or take action accordingly. Always use PickListAdd with the PickListDisplay command. Also, you typically use PickListAdd with the SetPlat command.

Example:
Windows Script
The user has three accounts for this application and wants to be able to pick which one to use. The user picks an account to use, and SecureLogin (using the SetPlat command) switches to that set of credentials.

```
# Login Dialog Box
Dialog
   Class #32770
   Title "Login"
EndDialog

PickListAdd "Account One" "One"
PickListAdd "Account Two" "Two"
PickListAdd "Account Three" "Three"
PickListDisplay ?Account "Select the account to use." -NoEdit
SetPlat ?Account
Type $Username #1001
Type $Password #1002
Click #1
```

PickListDisplay

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	All
Type:	Action
Usage:	PickListDisplay *?Variable Display-Tex*t [-NoEdit]

Item	Description
Arguments:	
?Variable	The output variable for the selected option.
*Display-Tex*t	The description text for the pick list box.
-NoEdit	Prevents users from adding entries to the pick list.
Description:	Displays the pick list entries built by previous calls to PickListAdd. The PickListDisplay command returns the result in a *?Variable* sent to the command. If the desired entry is not among the displayed entries, users can enter their own data into an edit field at the bottom of the pick list. You can turn off this feature by setting the -NoEdit flag.
Syntax Examples:	PickListDisplay ?Choice PickListDisplay ?Choice "Select the account you want to use" PickListDisplay ?Choice "Select the account you want to use" -NoEdit

Example:
Windows Script
The user has three accounts for this application and wants to be able to pick which one to use. The user picks an account and SecureLogin (using the SetPlat command) switches to that set of credentials.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`PickListAdd "Account One" "One"`
	`PickListAdd "Account Two" "Two"`
	`PickListAdd "Account Three" "Three"`
	`PickListDisplay ?Account "Select the account to use." -NoEdit`
	`SetPlat ?Account`
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

PositionCharacter

Item	Description
Use with:	Password Policy Scripts
SecureLogin Version:	All
Type:	Action
Usage:	PositionCharacter [Numeral] [Uppercase] [Lowercase] [Punctuation] *position*, [*position*]...
Arguments:	
[numeral]	The character at *position* must be a numeral.
[uppercase]	The character at *position* must be an uppercase character.
[lowercase]	The character at *position* must be a lowercase character.
[punctuation]	The character at *position* must be a punctuation character.
position	The character *position* in the password.

Item	Description
Description:	Use this command in a password policy script to enforce that a certain character in the password be a numeral, uppercase, lowercase, or punctuation character. You can specify multiple positions.
Example: The password won't be valid unless the first, sixth and seventh characters are in uppercase.	`PositionCharacter Uppercase 1,6,7`

ReadText

Item	Description
Use with:	Terminal Launcher, Windows
SecureLogin Version:	All
Type:	Action
Windows Usage:	ReadText #Ctrl-*ID ?Variable*
Terminal Launcher Usage:	ReadText *?Variable Character-Number Row-Number*
Arguments:	
#Ctrl-ID	The control ID number of the text to be read.
?Variable	The variable that will receive the text that is read.
Character-Number	The number of characters to be read.
Row Number	The horizontal position number of the first character to be read (for example, row).
Description:	Runs in both Windows and Terminal Launcher scripts. Although the usage and arguments for the use of ReadText with Windows and Terminal Launcher are different, the results of each command are the same. In a Windows script, the ReadText command reads the text from any given *#Ctrl-ID* and sends it to the specified variable. For this command to function correctly, the *#Ctrl-ID* must be valid. In a Terminal Launcher script, the ReadText command reads a specified number of characters, starting at the *Row-Number*, and sends those characters to the specified *Variable*. The ReadText command won't work with Generic or Advanced Generic emulators. It only works with HLLAPI and some DDE emulators. For Generic or Advanced Generic emulators, use the IF -Text or GetText commands.
Syntax Examples:	ReadText #301 ?Text ReadText ?Text 4 6

Item	Description

Example 1: Windows Script
The same Title and Class appear in the error message dialog box when a user fails to log in. To distinguish among errors and provide users with more specific information (rather than a general message stating that the username and password are incorrect, or the account is locked), SecureLogin can read the actual error message, clear it by clicking OK, and prompt the user with a customized message.

```
# Login Failed Message
Dialog
   Class #32770
   Title "Login Failed"
EndDialog

ReadText #65535 ?ErrorMsg
Click #1

If "Invalid Username" -In ?ErrorMsg
   DisplayVariables "Verify your username and try again."
$Username
   Type $Username #1001
   Type $Password #1002
   Click #1
EndIf

If "Invalid Password" -In ?ErrorMsg
   DisplayVariables "Verify your password and try again."
$Password
   Type $Username #1001
   Type $Password #1002
   Click #1
EndIf

If "Account Locked" -In ?ErrorMsg
   MessageBox "Your account is locked. Contact the Helpdesk
at x3849."
   Endscript
EndIf
```

Example 2: Windows Script
Read the text from a control ID and set the Database variable so the user isn't prompted to.

```
# Login Dialog Box
Dialog
   Class #32770
   Title "Login"
EndDialog

ReadText #15 ?Database

If -Exists $Database
Else
   Set $Database ?Database
EndIf

Type $Username #1001
Type $Password #1002
Type $Database #1003
Click #1
```

Example 3: Terminal Launcher Script
Read a message in a Terminal Emulator and display it in a user-friendly format.

```
ReadText ?Message 30 24 2
MessageBox ?Message
```

RegSplit

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	RegSplit *RegEx Input-String* [*Output-String1 Output-String2*]...]
Arguments:	
RegEx	The regular expression.
Input-String	The string that will be split.
O*utput-String1*	The first subexpression.
Output-String2	The second subexpression.
Description:	Enables you to split a string by using a regular expression. *Output-String1* contains the first subexpression. *Output-String2* contains the second subexpression. For information on regular expressions, see http://msdn.microsoft.com/library/en-us/vcsample98/html/vcsmpspy.asp?frame=truehttp://etext.lib.virginia.edu/helpsheets/regex.html.

Example:
Windows Script
The text from control ID #301 is copied to the ?Text variable. The RegSplit command then strips the username details out of the text that was read. The user ID is set to that username, and SecureLogin enters the correct password
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`ReadText #65535 ?Text`
	`RegSplit "Enter the password for (.*) account" ?Text ?User`
	`SetPlat ?User`
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

Open-Text Example:	#?InputString: "This is a long string with a few components in it"
Command:	RegSplit "This (.*) a long (.*) with (.*) components (.*)" ?InputString ?First ?Second ?Third ?Fourth
Result:	?First = "is”, ?Second = "string”, ?Third = "a few”, ?Fourth = "in it”

ReloadPlat

For each dialog block in a script, the chosen User ID is reset and must therefore be reselected, either via a SetPlat command or by having the user reselect it from a list.

When an application first presents a login screen, SecureLogin directs the user to select an appropriate User ID from a list. SecureLogin enters the selected User ID's credentials into the application and submits them.

If the login fails due to incorrect credentials, SecureLogin prompts the user to change the credentials. SecureLogin doesn't retain User ID details and prompts the user to re-enter them. However, this could result in the user changing the wrong credentials if the user selects the incorrect User ID.

To resolve this issue, use the SetPlat, ReLoadPlat and ClearPlat commands. ReloadPlat sets the current User ID to the one which was last chosen (for the given application), or leaves the User ID unset if a User ID hasn't been selected previously.

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	3.51.1
Type:	Action
Usage:	Use ReLoadPlat at:
	Login. Before the user first logs into the application, call ReLoadPlat. This prevents the user from needing to reselect a user ID after a failed login.
	Failed Login. Call ReLoadPlat to reselect the user ID that contained the incorrect credentials. Then give the user an opportunity to change the credentials by using either a ChangePassword or a DisplayVariables command.
Arguments:	None
Description:	Sets the current user ID to the last one chosen by the script, or leaves the user ID unset if an ID hasn't been selected.
Example	For an example script that uses ReloadPlat, see the example script in "ClearPlat" on page 46.

Repeat / EndRepeat

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	Repeat [Loop#] EndRepeat
Arguments:	
[Loop#]	The number of times the repeat script block is repeated. If you don't specify a number, the repeat continues indefinitely unless you use other commands to break the loop.

Item	Description
Description:	The Repeat command establishes a script block similar to the If command. The EndRepeat command terminates the repeat block. To break out of a repeat block, use the Break or EndScript command.
Syntax Examples:	Repeat Repeat 3
Example: **Terminal Script** The Repeat command watches the screen for messages and responds accordingly. The Break command jumps to the next repeat loop in the script.	See script below

```
# Initial System Login
WaitForText "ogin:"
Type $Username
Type @E
WaitForText "assword:"
Type $Password
Type @E
Delay 500

# Repeat loop for error handling
Repeat

#Check to see if the password has expired
   If -Text "EMS: The password has expired."
      ChangePassword #Password
      Type $Password
      Type @E
      Type $Password
      Type @E
   EndIf

#User has an invalid username or password (or both) stored.
   If -Text "Login Failed"
      DisplayVariables "The username or password (or both)
stored by SecureLogin is invalid. Verify your credentials and
try again. IT x453."
      Type $Username
      Type @E
      Delay 500
      WaitForText "assword:"
      Type $Password
      Type @E
         Delay 500
   EndIf

# Account is locked for some reason, possibly inactive.
   If -Text "Account Locked"
      MessageBox "Your account has been locked, possibly
because of inactivity for 40 days. Contact the administrator
at x453."
   EndIf

# Main Menu, user has logged in successfully.
   If -Text "Application Selection"
      Break
   EndIf

Delay 100
EndRepeat
```

RestrictVariable

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	RestrictVariable *Variable-Name Password-Policy*
Arguments:	
Variable-Name	The name of the variable to restrict.
Password-Policy	The name of the policy to enforce on the variable.
Description:	Monitors a *Variable* and enforces a specified *Password Policy* on the *Variable*. Any variable specified must match the policy or it won't be saved. When restricting variables to policies, be aware of the following information if you are making a tighter policy than is already in place. If you restrict a variable that doesn't match the policy today, the user won't be able to save it the first time. (When SecureLogin detects that there is no saved credential, a user who has a password of 6 characters today won't be able to save it if the policy restricts the $Password variable to eight characters and two numbers.) Example 2 tells how to work around this issue. Instead of restricting the $Password variable, restrict a new password variable (?NewPwd). The User will be able to store an existing password the first time that SecureLogin prompts for the credentials. Also, SecureLogin enforces the stronger password policy when the password expires in *x* days. You can restrict any variable by using a password policy, not just a $Password. You can also use RestrictVariable to make sure other variables are entered in the correct format. For example, the $Username might need to be lowercase, or $Database might need to be six characters with no numbers.

Item	Description

Example 1: Windows Script The script restricts the $Password variable to the Finance password policy. When the user first saves login credentials, the user's password must match the policy. When the password requires changing, the script randomly generates a new password based on that policy. No user intervention is required.	`# Set the Password to use the Finance Password Policy`
	`RestrictVariable $Password FinancePwdPolicy`
	
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	
	`# Change Password Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Change Password"`
	`EndDialog`
	
	`Type $Username #1015`
	`Type $Password #1004`
	`ChangePassword $Password Random`
	`Type $Password #1005`
	`Type $Password #1006`
	`Click #1`

Example 2: Windows Script The script restricts the ?NewPwd variable to the Finance password policy. When the application starts for the first time and prompts the user to enter credentials, the user's current password ($Password) is saved and used. When the password expires, the password policy is enforced on any new password. If you can't guarantee that all existing passwords meet the new policy, this is a graceful way to enforce tougher password policies than are currently in place.	`# Set the Password to use the Finance Password Policy`
	`RestrictVariable ?NewPwd FinancePwdPolicy`
	
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`
	
	`# Change Password Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Change Password"`
	`EndDialog`
	
	`Type $Username #1015`
	`Type $Password #1004`
	`ChangePassword ?NewPwd Random`
	`Type ?NewPwd #1005`
	`Type ?NewPwd #1006`
	`Set $Password ?NewPwd`
	`Click #1`

Run

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows

Item	Description
SecureLogin Version:	All
Type:	Action
Usage:	Run *Command* [*Arg1* [*Arg2*] ...]
Arguments:	
Command	The full path of the program to be executed.
[*Arg1* [*Arg2*]...]	An optional list of arguments or switches for the command.
Description:	Launches the program specified in the *Command* with the specified optional [*Arg1* [*Arg2*] ...] arguments. The script doesn't wait for the launched program to complete.

Example:
Startup Script
The user is prompted to start the Finance System. If the user clicks Yes, the Run command (with the necessary switches) starts the application. If the user clicks No, a message box is displayed, and the application isn't started.

```
MessageBox "Would you like to connect to the Finance System?"
-YesNo ?Result

If ?Result Eq "Yes"
   Run "C:\Program Files\HRS\Finance.exe" /DB:HRS /Debug
Else
  MessageBox "You have chosen not to run the Finance System.
Please do so manually."
   EndScript
EndIf
```

SelectListBoxItem

Item	Description
Use with:	Advanced Web Scripts
SecureLogin Version:	3.5
Type:	Action
Usage:	SelectListBoxItem *Text of Item to set to* [*item Number*] [-*multiselect*]
Arguments:	
Text of Item to set to	The text item that you want SecureLogin to select in the list box.
[*Item Number*]	When multiple list boxes are found, this specifies which list box to address.
[-*multiselect*]	Used to select multiple list box entries by using a subsequent SelectListBoxItem command.
Description:	Selects entries from a list box. For information on determining item numbers, see "DumpPage" on page 55.

Item	Description

Example:	`SelectListBoxItem "Remember Defects" #2 -multiselect`
	`SelectListBoxItem "Remember Enhancements" #2 -multiselect`

SendKey

Item	Description
Use with:	Terminal Launcher
SecureLogin Version:	All
Type:	Action
Usage:	SendKey *Text*
Arguments:	
Text	The text to be typed into the emulator screen.
Description:	Works only with Generic and Advanced Generic emulators. Use SendKey in the same manner as the Type command. Generally, the Type command is the preferred command to use. The Type command places the text into the Clipboard and then pastes it into the emulator screen. The SendKey command enters the text directly into the emulator screen. Variables don't work with the SendKey command. If you want to use variables, use the Type command. The Type command has many special functions, some of which can also be used with the SendKey command. For information on these functions, see "Type" on page 102.

Example: Terminal Launcher Script
The SendKey command sends the username and password to the terminal emulator.
	`#Send Username`
	`SendKey mkurz`
	`SendKey "\N"`
	`#Send Password`
	`SendKey "Hu7%f"`
	`SendKey "\N"`

Set

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action

Item	Description
Usage:	Set *Variable Data*
Arguments:	
Variable	The variable that the data is being assigned to.
Data	The text or variable being read from and assigned to the variable.
Description:	Copies the value of *Data* into *Variable*. The *Data* can be any text or another variable. However, the *Variable* argument must be a ?Variable or $Variable.

Example 1: Windows Script The script sets a ?RunCount variable to count the number of times the application is run.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`If ?RunCount Eq` *`NOTSET`*
	`   Set ?RunCount "1"`
	`Else`
	`   Increment ?RunCount`
	`EndIf`
	
	`Type $Username #10091`
	`Type $Password #1002`
	`Click #1`

Example 2: Windows Script The script sets the ?NewPwd to the stored variable, $Password.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`
	
	`# Change Password Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Change Password"`
	`EndDialog`
	
	`Type $Username #1015`
	`Type $Password #1004`
	`ChangePassword ?NewPwd Random`
	`Type ?NewPwd #1005`
	`Type ?NewPwd #1006`
	`Set $Password ?NewPwd`
	`Click #1`

Item	Description

Example 3: Windows Script The script reads the value of Ctrl #15 and sets the $Database variable so that the user doesn't need to.	
	```
	# Login Dialog Box
	Dialog
	   Class #32770
	   Title "Login"
	EndDialog

	ReadText #15 ?Database
	If -Exists $Database
	   Else
	   Set $Database ?Database
	EndIf
	```

SetCheckBox

Item	Description
Use with:	Advanced Web Script
SecureLogin Version:	3.5
Type:	Action
Usage 1:	SetCheckBox *Item Number Option*
Arguments:	
Item Number	The check box in reference to the number of check boxes found.
Option	Specifies the status of the check box as Checked or Unchecked.
Description:	Allows the selection of a check box to be checked or unchecked.

Item	Description

Example:	`Messagebox "Scroll down so you can see the 'Search Language' section and all the languages with the check boxes, then click OK on this message box."`
	`SetCheckBox #1 "checked"`
	`SetCheckBox #2 "checked"`
	`SetCheckBox #3 "checked"`
	`SetCheckBox #4 "checked"`
	`SetCheckBox #25 "checked"`
	`SetCheckBox #26 "checked"`
	`SetCheckBox #27 "checked"`
	
	`Messagebox "Did it select the first four languages and Norwegian, Polish and Portuguese languages" -yesno ?advweb`
	
	`If ?advweb Eq yes`
	`  Set ?cmd37 "SetCheckBox command worked"`
	`Else`
	`  Set ?cmd37 "SetCheckBox failed"`
	`EndIf`
	`SetCheckBox #1 "unchecked"`
	`SetCheckBox #2 "unchecked"`
	`SetCheckBox #3 "unchecked"`
	`SetCheckBox #4 "unchecked"`
	`SetCheckBox #26 "unchecked"`
	`SetCheckBox #27 "unchecked"`
	
	`Messagebox "Did it unselect all the languages except Norwegian" -yesno ?advweb2`
	`If ?advweb2 Eq yes`
	`  Set ?cmd38 "SetCheckBox command worked"`
	`Else`
	`  Set ?cmd38 "SetCheckBox failed"`
	`EndIf`

SetCursor

Item	Description
Use with:	Terminal Launcher (Only available in HLLAPI and some DDE emulators)
SecureLogin Version:	All
Type:	Action
Usage 1:	SetCursor *Screen-Position*
Usage 2:	SetCursor *X Coordinate* Y *Coordinate*
Arguments:	
Screen-Position	On the screen, the position that the cursor should be moved to.
X Coordinate	The horizontal coordinate. When *X-Coordinate* is specified, a row/column conversion is carried out before the cursor is set to the position.
Y Coordinate	The vertical coordinate. When *Y-Coordinate* is specified, a row/column conversion is carried out before the cursor is set to the position.

Item	Description
Description:	Sets the cursor to a specified *Screen Position* or *X Coordinate Y Coordinate*. The position will be noted by a number greater than 0 (for example, SetCursor 200). If the screen position is invalid, Terminal Launcher displays an error message.
Syntax Examples:	SetCursor 200 SetCursor 100 500

Example:
Terminal Launcher Script
The cursor is set to the correct position, then the credentials are entered.
	`SetCursor 200`
	`Type $Username`
	`Type @E`
	`Type $Password`
	`Type @E`

SetFocus

Item	Description
Use with:	Java, Web, Windows
SecureLogin Version:	All
Type:	Action
Usage:	SetFocus *#Ctrl-ID*
Arguments:	
#Ctrl-ID	The ID number of the control that the keyboard focus will be directed to.
Description:	Hands the keyboard focus to a specified *#Ctrl-ID*. For the SetFocus command to function correctly, the *#Ctrl-ID* must be valid.

Example:
Windows Script
SecureLogin sets the focus to the username field (#1001), types the username, simulates the tab, types the password, then simulates Enter.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`SetFocus #1001`
	`Type $Username`
	`Type \T`
	`Type $Password`
	`Type \N`

SetPlat

Item	Description
Use with:	All

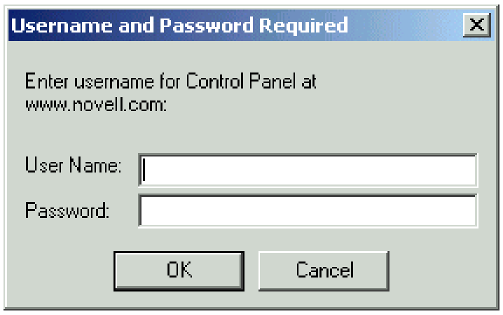
Item	Description
SecureLogin Version:	All
Type:	Action
Usage 1:	SetPlat *Application-Name*
Usage 2:	SetPlat *RegEx Variable #Ctrl-ID*
Arguments:	
Application-Name	The application name that the variables are read from.
RegEx	A regular expression to be used as the application name.
Variable	Must be a ?Variable previously set (for example, using a pick list).
#Ctrl-ID	The control ID of the regular expression to be used. For information on regular expressions, see http://msdn.microsoft.com/library/en-us/vcsample98/html/vcsmpspy.asp?frame=truehttp://etext.lib.virginia.edu/helpsheets/regex.html.
Description:	By default, variables are stored directly against the platform or application that you have enabled for single sign-on. For example, if you enable Groupwise.exe, the Groupwise® credentials are stored against the Groupwise.exe application. You might have multiple accounts (for example, your own login and an Admin login) accessing the same application. Or you might have multiple applications using a common set of credentials. In these cases, SetPlat sets the application that the variables are read to and saved from. You can also use SetPlat to do the following: ◆ Script application1 to read its $Username and $Password from application2. This saves a user entering the credentials twice and having to remember to update them in both locations when the credentials change. ◆ Script application1, application2, and application3 to read their credentials from Platform "Common." This means that you have a single store of common information that only needs to be updated once. ◆ Create new applications, depending on what a user selected in a pick list. If the *Application-Name* doesn't exist, it will be created. SetPlat can also read from a *#Ctrl-ID* and support regular expressions.

Item	Description

Example 1: Windows Script SecureLogin displays a pick list and sets a new user ID so that multiple users can log in to the application. In this case, SetPlat creates a new use ID called Default User, Global Administrator, or Regional Administrator. The respective $Username and Password are saved there.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`PickListAdd "Default User"`
	`PickListAdd "Global Administrator"`
	`PickListAdd "Regional Administrator"`
	`PickListDisplay ?Choice "Select the account to use." -NoEdit`
	
	`SetPlat ?Choice`
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #3`

Example 2:
Web Script

The following figure illustrates a standard dialog box for accessing a password-protected site using Netscape Navigator.


Username and Password Required

Enter username for Control Panel at www.novell.com:

User Name:

Password:

When you specify the Title, Class, Username, and Password fields of this dialog box, they will always be the same. If you stored the Username and Password against this application without using the SetPlat command, the Username and Password for www.novell.com would be entered to log in to any site (and are invalid for any other site).

However, the dialog box pictured above always contains the name of the Web site to log in to. This can be used as the unique identifier, to set a new SecureLogin platform, and save login credentials to.

The solution to this problem is to use a dialog block with a SetPlat statement similar to the following:

```
Dialog
   Title "Username and Password Required"
   Ctrl #330
   Ctrl #214
   Ctrl #331
   Ctrl #1
   Ctrl #2
   Setplat #331 "Enter username for .* at (.*):"
EndDialog
```

```
Type $Username #214
Type $Password #330
Click #1
```

The power of this script is in the following line:

```
Setplat #331 "Enter username for .* at (.*):"
```

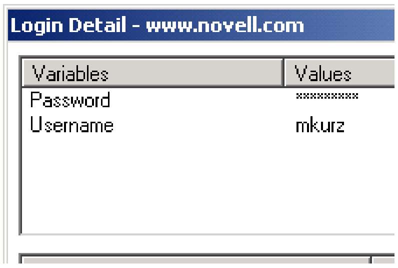
The script first reads the following line from dialog control ID 331:

```
Enter username for Control Panel at www.novell.com:
```

The script then applies the regular expression to this text. Regular expressions are a powerful way to manipulate text strings. However, for most purposes you can use the basic commands listed in the following table:

Basic Command	Action
* (an asterisk)	Matches any character
. (a period)	Matches zero or more of the preceding character
( ) (parentheses)	Makes the contents of the parentheses a subexpression

After running the script, the user sees the username and password saved as www.novell.com.


Login Detail - www.novell.com

Variables	Values
Password	**********
Username	mkurz

The text that is matched inside the parentheses then becomes the symbol application. If a dialog *#Ctrl-ID* is not specified, the symbol application is unconditionally changed to the application specified in the *RegEx*. An unconditional SetPlat command is only valid if specified before Dialog/ EndDialog statements.

SetPrompt

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action
Usage:	SetPrompt *Prompt-Text*

Item	Description
Arguments:	
Prompt-Text	The customized text prompt to be displayed in the Enter SecureLogin Variables dialog box.
Description:	Customizes the text in the Enter SecureLogin Variables dialog boxes that are used to prompt the user for new variables. For Variables that have been stored previously, you can also use the DisplayVariables command to customize the prompt text in the dialog box. Positioning of the setprompt command is crucial. SetPrompt must be before the first usage of each variable to name that variable, and the final SetPrompt is applied to the text displayed at the top of the prompt screen).

Example 1: Windows Script To replace the default text prompt in the Enter SecureLogin Variables dialog box, place the SetPrompt command at the bottom of the script	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`
	
	`SetPrompt "Enter your username and password for accessing the Human Resources system. In the future, SecureLogin will remember these credentials and automatically log you in. IT Helpdesk x4564"`

Example 2: Windows Script To replace the text prompt next to any variable entry field in the Enter SecureLogin Variables box, place the SetPrompt command immediately before the variable in the script.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`SetPrompt "Enter Username==>"`
	`Type $Username #1001`
	
	`SetPrompt "Enter Password==>"`
	`Type $Password #1002`
	`Click #1`
	
	`SetPrompt "Enter your username and password for accessing the Human Resources system. In the future, SecureLogin will remember these credentials and automatically log you in. IT Helpdesk x4564"`

Strcat

Item	Description
Use with:	All
SecureLogin Version:	All
Type:	Action

Item	Description
Usage:	Strcat *Variable Input-String1 Input-String2*
Arguments:	
Variable	The variable that you want the result saved to.
Input-String1	The first data string or variable.
Input-String2	The second data string or variable.
Description:	Appends the second data string to the first data string. **Scenario:** You include the following line in a script: `StrCat ?Result "SecureRemote” "$Username”` When $Username is Tim, the ?Result variable contains the value "SecureRemote Tim.”

Example:
Windows Script
The username is read from #1001 into ?Username. The StrCat command joins the username and the password. The result is a LoginID that SecureLogin uses to log the user in to the system.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Readtext #1001 ?Username`
	`StrCat ?LoginID ?Username $Password`
	`Type ?LoginID #1002`
	`Click #1`

StrLength

Item	Description
Use with:	All
SecureLogin Version:	3.0.4
Type:	Variable manipulator
Usage:	StrLength *Destination String*
Arguments:	
Destination	The output variable. Also the input variable if no source is specified.
String	The string whose length is to be measured.
Description:	Counts the number of characters in a variable and outputs that value to the destination variable.

Item	Description

Example: Windows Script The password is read from #301. StrLength is then used to count the number of characters. If the number is less that 4, an error message is displayed.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Readtext #301 ?Password`
	`StrLength ?Length ?Password`
	`If ?Length Lt "4"`
	`   Messagebox "Password is too short"`
	`EndIf`

StrLower

Item	Description
Use with:	All
SecureLogin Version:	3.0.4
Type:	Variable manipulator
Usage:	StrLower *Destination* [*Source*]
Arguments:	
Destination	The output variable. Also the input variable if no source is specified.
[*Source*]	The input variable. If not specified, SecureLogin reads the destination variable, makes the necessary changes, and writes over it.
Description:	Modifies a variable so that all the characters are lowercase. If only a destination variable is specified, the string is read from the destination, then stored back to it. If a source variable is specified, the string is read from the source, and the modified value is stored in the destination variable. In this case, the source variable remains unchanged.

Example: Windows Script SecureLogin reads the username from #1001 and copies it into ?Username. The StrLower command is then used to ensure that the username is in all lowercase.	`#Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Readtext #1001 ?Username`
	`StrLower ?LowerCaseUsername ?Username`
	`Type ?LowerCaseUsername #1002`
	`Click #1`

StrUpper

Item	Description
Use with:	All
SecureLogin Version:	3.0.4
Type:	Variable manipulator
Usage:	StrUpper *Destination* [*Source*]
Arguments:	
Destination	The output variable. Also the input variable if no source is specified.
[*Source*]	The input variable. If you don’t specify a source, SecureLogin reads the destination variable, makes the necessary changes, and writes over the variable.
Description:	Modifies a variable so that all the characters are uppercase. If only a destination variable is specified, the string is read from the destination, then stored back to it. If a source variable is specified, the string is read from the source, and the modified value is stored in the destination variable. In this case, the source variable remains unchanged.

Example:
Windows Script
SecureLogin reads the username from #1001 and copies it into ?Username. The StrLower command is then used to ensure that the username is in all uppercase.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Readtext #1001 ?Username`
	`StrUpper ?UpperCaseUsername ?Username`
	`Type ?UpperCaseUsername #1002`
	`Click #1`

Sub / EndSub

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	2.5
Type:	Flow control
Usage:	Sub *Name* EndSub
Arguments:	
Name	Any name entered to identify the subroutine.
Description:	Used around a block of lines within a script to denote a subroutine. You can call a subroutine by using the Call command.

Item	Description

Example: Terminal Launcher Script The emulator screen is checked for the text "Login" or "Wrong Password." If either of these is found, the appropriate subroutine is called and run before the next part of the script.	
	```
	If -Text "Login"
	   Call Login
	EndIf

	If -Text "Wrong Password"
	   Call "WrongPassword"
	EndIf

	Sub Login
	   Type $Username
	   Type @E
	   Type $Password
	   Type @E
	EndSub

	Sub WrongPassword
	   DisplayVariables "Enter correct password" $Password
	   Call Login
	EndSub
	```

Submit

Item	Description
Use with:	Web
SecureLogin Version:	3.0
Type:	Action
Usage:	Submit
Arguments:	None

Item	Description

Description:	Use the Submit command only in Web scripts and only with Internet Explorer, to allow for enhanced control of how and when a form is submitted. The Submit command performs a Submit on the form that the first password field is found in.
	
	When used with Netscape, the Submit command is ignored.
	
	By default, the function performed by the Submit command is automatically performed by a Web script. For example, the following script types the username, types the password, and submits the form:
	
	`Type $Username`
	`Type $Password Password`
	
	Submits don't automatically occur if any of the following commands are in the script. If any one of these commands is used, you must use the Submit command:
	◆ Type \N
	◆ Type \T
	◆ Submit
	◆ Click
	
	If one of these commands is in the script, you must use the Submit command or some other means to cause the form to be submitted.
	
	Furthermore, an automatic submit won't occur if you type text into a specific text entry field. For example, in the following script segment the Submit command must follow the Type command for the script to work properly:
	
	`Type $Username #1001`
	
	`Submit`

Example:
Web Script
The script enters the username and password, then performs a manual Submit.
	`Type $Username #1`
	`Type $Password Password #2`
	`Submit`

Subtract

Item	Description
Use with:	Startup scripts, Terminal Launcher, Web, Windows
SecureLogin Version:	3.0
Type:	Variable manipulator
Usage:	Subtract *Start-Value Subtract-Value* [?Result]

Item	Description
Arguments:	
Start-Value	The start number that the second argument will be subtracted from. This argument will contain the result if the optional [?Result] argument is not passed in. If you use the *Start-Value* argument without the [?Result] argument, *Start-Value* must be a SecureLogin variable (for example, ?*Start-Valu*e or $*Start-Value*). If the [?Result] argument is provided, *Start-Value* can be a SecureLogin variable or a numeric value.
Subtract-Value	The number that will be subtracted from the first argument. *Subtract-Value* can be a SecureLogin variable or a numeric value.
[?Result]	Optional. The result of the equation. If you use this argument, set it to Start-Value - Subtract-Value. The [?Result] must be a SecureLogin variable (for example, $Result or ?Result).
Description:	Subtracts one value from another. This can be useful if you are implementing periodic password change functionality for an application. The subtract command (in conjunction with the Divide function and the Slina .dll file) can be used to determine the number of days that have elapsed since the last password change. The Subtract command correctly subtracts when *Start-Value*, *Subtract-Value*, and *Result* are between -2147483648 and +2147483647. Subtract doesn’t work with fractions.
Syntax Examples:	Subtract "1" "2" ?Result Subtract ?LoginAttempts ?LoginFailures Subtract ?LoginAttempts ?LoginFailures ?Result Subtract ?LoginAttempts "3" Subtract ?LoginAttempts "3" ?Result

Example:
Windows Script
The values of Control IDs 103 and 104 are read into variables. From there they are subtracted and typed into Control ID 1.
	`ReadText #103 ?Number1`
	`ReadText #104 ?Number2`
	`Subtract ?Number1 ?Number2 ?Result`
	`Type ?Result`

Tag/EndTag

Item	Description
Use with:	Advanced Web Script
SecureLogin Version:	3.5
Type:	Tag specifier
Usage:	Tag EndTag

Item	Description
Arguments:	None
Description:	Used to find HTML tags.

Example:
SecureLogin finds the form that has an attribute of "name" with a value of "login”.
	`Tag "Form"`
	`  Attribute "Name" "Login"`
	`EndTag`

Title

Item	Description
Use with:	Java, Windows
SecureLogin Version:	All
Type:	Dialog specifier
Usage:	Title *Window-Title*
Arguments:	
Window-Title	The text to test against the window title.
Description:	Retrieves the title of the window and compares it against the string specified in the *Window-Title* argument. For this block of the script to run, the retrieved window title and the *Window-Title* argument must match exactly. Title is one of the main commands that you can use to identify a window. However, just using the Title command alone may not be enough. If an application has more than one window with the specified title, the SecureLogin script will run every time that window is detected. To uniquely identify a window, typically use the Title command with the Class or Ctrl command. In any Dialog statement, place the Class command before the Title command. You can use Window Finder to locate the window title. See “Finding Control IDs” on page 32.

Example:
Windows Script
The dialog box is tested to see whether it has the correct title. If the title isn’t correct, the script passes on to the next Dialog block.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Click #1`

Type

Item	Description
Use with:	Java, Terminal Launcher, Web, Windows
SecureLogin Version:	All
Type:	Action
Terminal Launcher Usage:	Type [-Raw] *Text*
Windows Usage:	Type *Text* [#*Ctrl-ID*] Type [-Raw] *Text*
Web Usage:	Type *Text* [#*Field-ID*] Type *Text* [Password]
Arguments:	
[-Raw]	By default, when typing into a Terminal Emulator or Windows application, SecureLogin verifies that the window exists before continuing. This verification process is disabled when the -Raw argument is provided,. Instead of trying to set the text in the field directly, this option simulates actual keystrokes, causing SecureLogin to type into whichever window has focus.
Text	The text to type into this area. This text can be either static text, such as ABC, or any SecureLogin variable, such as $Username.
[#*Ctrl-ID*]	For Windows scripts, this optional argument specifies the control that the text will be typed in to. You can use Window Finder to extract these control IDs. See "Windows-Specific Information" on page 103.
[*Field-ID*]	For Web scripts, this optional argument specifies the text field that the text will be typed in to. See."Web-Specific Information" on page 103.
[Password]	For Web scripts, this optional argument specifies that this type should be performed into the password field on this form. If you use [Password], that application's script cannot use a #*Ctrl-ID* argument. See "Web-Specific Information" on page 103.

Item	Description
Description:	Used to enter data (for example, usernames and passwords) into applications. Some character sequences are reserved. These character sequences are used to type special characters such as Tab and Enter. See Chapter 7, “Keystrokes and Functions,” on page 119. If you can’t determine control IDs in a Windows application, and the Type command is not working, you can use the SendKey command. **Windows-Specific Information** In Windows, if the *#Ctrl-ID* argument is provided, it must be a number that refers to a control ID as identified by Window Finder. SecureLogin then sends the contents of the *Text* argument directly to the window and to the specific control that matches the *#Ctrl-ID* argument If the *Ctrl-ID* is not specified, SecureLogin sends keystrokes to whichever control has focus. In the Windows environment, the -Raw option is often useful when ◆ Window Finder is unable to determine control IDs for the text entry areas of an application ◆ These control IDs are changing. When you use the -Raw option, don’t use the *#Ctrl-ID* argument. **Web-Specific Information** You can use either of two methods to specify which field receives *Text*. The first method uses absolute positioning through the *#Field-ID* argument. The *#Field-ID* is a number that refers to the location of the field within the HTML form. For example, #1 refers to the first text entry field in the Web form, and #2 refers to the second text entry field. The second method uses relative position via the [Password] argument. In this method, the SecureLogin agent first locates the text field that is a password field within the HTML form. Then the *Text* is typed into that field. Other Type commands send their *Text* parameters to fields that are relative to the first password field. For example, the Type command immediately preceding the Type command that has the [Password] argument is sent to the text field immediately preceding the first password field. See the example Web script.

Example 1: Windows Script A typical use of the Type command in a Windows script.	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`Type $Username #1001`
	`Type $Password #1002`
	`Type "DB2" #1003`
	`Click #1`

Item	Description

Example 2: Windows Script This typical example shows the use of the -Raw switch.	`# Calculator Is Active`
	`Dialog`
	`   Class #SciCalc`
	`   Title "Calculator"`
	`EndDialog`

(The -Raw switch is not actually required in this instance. It is only an example.)	`Type -Raw "15"`
	`Type -Raw "+"`
	`Type -Raw "20"`
	`Type -Raw "="`

Example 3: Web Script The SecureLogin agent automatically generated this script for the mail.yahoo.com site. This example shows the use of Password as the [Password] argument.	In the following script, the SecureLogin agent locates the first password field. The first Type command sends $Username to the field immediately before the password field. The second Type command sends $Password to the password field.
	`Type $Username`
	`Type $Password Password`
	The same script could be rewritten using absolute placement, as shown below. In this example, the Submit command is also used to automatically submit the page.
	`Type $Username #1`
	`Type $Password #2`
	`Submit`

Sending Keyboard Commands by Using Type

Type Commands Used with Windows

SecureLogin can send special keyboard keystrokes to Windows and Internet-based applications to emulate the user's keyboard entry. The Type command can pass keystrokes through to the window that the script is working in. These special commands include the ability to select Menu items, send Alt, and send other keyboard combinations.

Special Key Commands

Commands	Description
Type \Alt+*key*	Simulates pressing the Alt key plus the desired *key*.
Type \Shift+*key*	Simulates pressing the Shift key plus the desired *key*.
Type \Ctrl+*key*	Simulates pressing the Ctrl key plus the desired *key*.
Type \LWin+*key*	Simulates pressing the left Windows key plus the desired *key*.
Type \RWin+*key*	Simulates pressing the right Windows key plus the desired *key*.

Commands	Description
Type \Apps+*key*	Simulates pressing the Application key plus the desired *key*.

Raw Key Commands

You can also use the Type command to send a combination of raw key commands.

Commands	Description
Type \\|*xxx*	The format for sending a raw key command, where *xxx* represents the keyboard code. See Appendix D, "Keyboard Functions and Codes," on page 135.
Type \18+65	Simulates pressing the Alt-A keys in sequence.

Type Commands Used with Terminal Launcher

Terminal Launcher uses the High Level Language Application Programming Interface (HLLAPI) to interface with a wide range of mainframe emulators that implement this programming standard. The table in "@ Commands Used with Emulators" on page 120 lists the @ commands that you can use in the SecureLogin script Type command. These commands perform specific emulator and mainframe functions. For example, you can send an Enter, Tab, or cursor key, or issue a mainframe emulator print screen or reset function.

The @ commands are used in script language in the following format:

- Type @ *command*
- WaitForText "Login:"
- Type $Username
- Type @T
- Type $Password
- Type @E

WaitForFocus

Item	Description
Use with:	Windows
SecureLogin Version:	All
Type:	Flow control
Usage:	WaitForFocus #*Ctrl-ID* [*Repeat-Loops*]

Item	Description
Arguments:	
#Ctrl-ID	The ID number of the control that will have the focus.
[*Repeat-Loops*]	The number of repeat loops that will run.
Description:	Suspends running the script until the *#Ctrl-ID* has received keyboard focus or until the *Repeat-Loops* argument expires. The *Repeat-Loops* argument is an optional value. It defines the number of loop cycles that will run. The *Repeat-Loops* value defaults to 3000 loops if nothing is set. As soon as focus is received, the script continues. As the following line illustrates, by setting the figure to a negative number, you can set *Repeat-Loops* to never expire: `WaitForFocus "#1065" "-1"` If the #Ctrl-ID is set to 0 (zero), it loops until the window defined in the Dialog / EndDialog statement is given keyboard focus. **NOTE:** Don't place WaitForFocus commands within Dialog / EndDialog statements.
Syntax Examples:	WaitForFocus #301 WaitForFocus #301 "2000" WaitForFocus #301 "0" WaitForFocus #301 "-1

Example:
Windows Script
After the Login dialog box has been detected, SecureLogin waits indefinitely for window #301 to get focus before entering the user credentials.
	`# Login Dialog Box`
	`Dialog`
	`   Class #32770`
	`   Title "Login"`
	`EndDialog`
	
	`WaitForFocus #301 "-1"`
	`Type $Username`
	`Type \T`
	`Type $Password`
	`Type \N`

WaitForText

Item	Description
Use with:	Terminal Launcher
SecureLogin Version:	All
Type:	Flow control
Usage:	WaitForText *Text*
Arguments:	
Text	The text that the script is waiting for.

Item	Description
Description:	Causes Terminal Launcher to wait for the specified *Text* to be displayed before continuing. This command is important because the user often wants to wait for particular text to be displayed on the screen before continuing. For example, it is important to wait for a username field to be displayed before attempting typing an actual username into it. The *Text* can appear anywhere on the terminal screen. The *Text* is usually case-sensitive, depending on the terminal emulator you are using. If the *Text* is written in the wrong case, Terminal Launcher pauses and tries to find the correct *Text* in the correct case, pausing until the terminal screen times out. If WaitForText isn't working, try leaving the initial letter off the *Text*, so that you avoid any conflict with case. For example, the following line will work regardless of whether "login" is presented on the terminal screen as "Login" or "login". `WaitForText "ogin”` However, WaitForText "Login" will only work if "login" is presented on the screen as "Login". Also, some terminal emulators won't correctly match text that is against the left margin of the window. Again, if you encounter this situation, try to match text without the leading character.

Example:
Terminal Launcher
SecureLogin waits for the text "ogin:" to appear on the emulator screen before entering the username. SecureLogin then waits for "assword:" to be displayed before entering the password
	`WaitForText "ogin:"`
	`Type $Username`
	`Type @E`
	`WaitForText "assword:"`
	`Type $Password`
	`Type @E`

6 Practicing Your Scripting Skills

This section enables you to practice your scripting skills by using the Password Test Application (PasswordTest.exe) and SecureLogin. Password Test Application replicates an application login panel. The script is a typical example of scripting for a Windows application.

Using the Wizard to Create a Script

In this section, you will use the Add Application Wizard to create a script for Password Test Application.

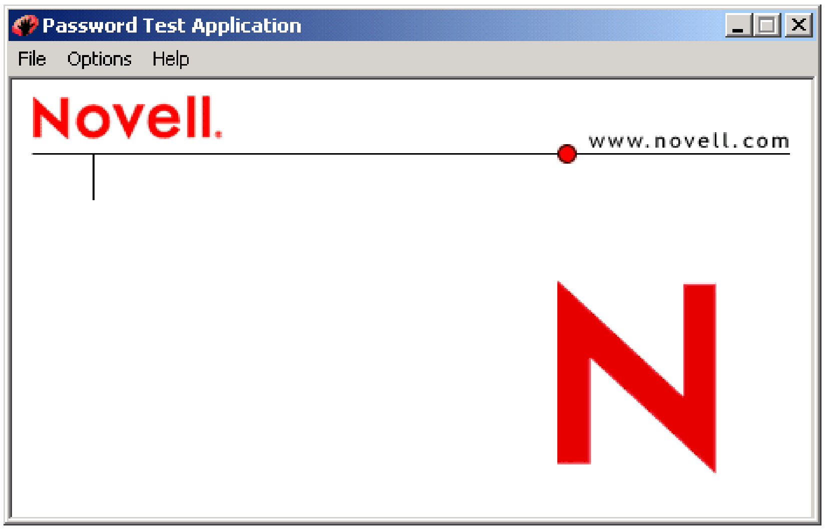
1 Run SecureLogin.

Click Start > Programs > Novell SecureLogin > Novell SecureLogin. The SecureLogin icon is active on the system tray.

2 Run PasswordTest.exe.

The file is in the \securelogin\tools directory.

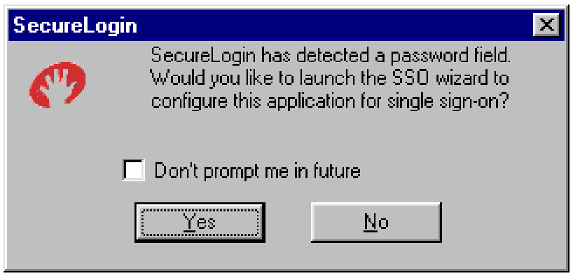
The following figure illustrates Password Test Application's main window.



3 Create login credentials for Password Test Application.

3a In the Password Test Application window, click File > Log In.

Because SecureLogin is active on the system tray, SecureLogin prompts you to use the Add Applications Wizard (SSO wizard) to add a login for Password Test.


SecureLogin

SecureLogin has detected a password field. Would you like to launch the SSO wizard to configure this application for single sign-on?

☐ Don't prompt me in future

3b Launch the Add Application Wizard by clicking Yes.

3c In the Select Window Function dialog box, select Login Window, then click Next.

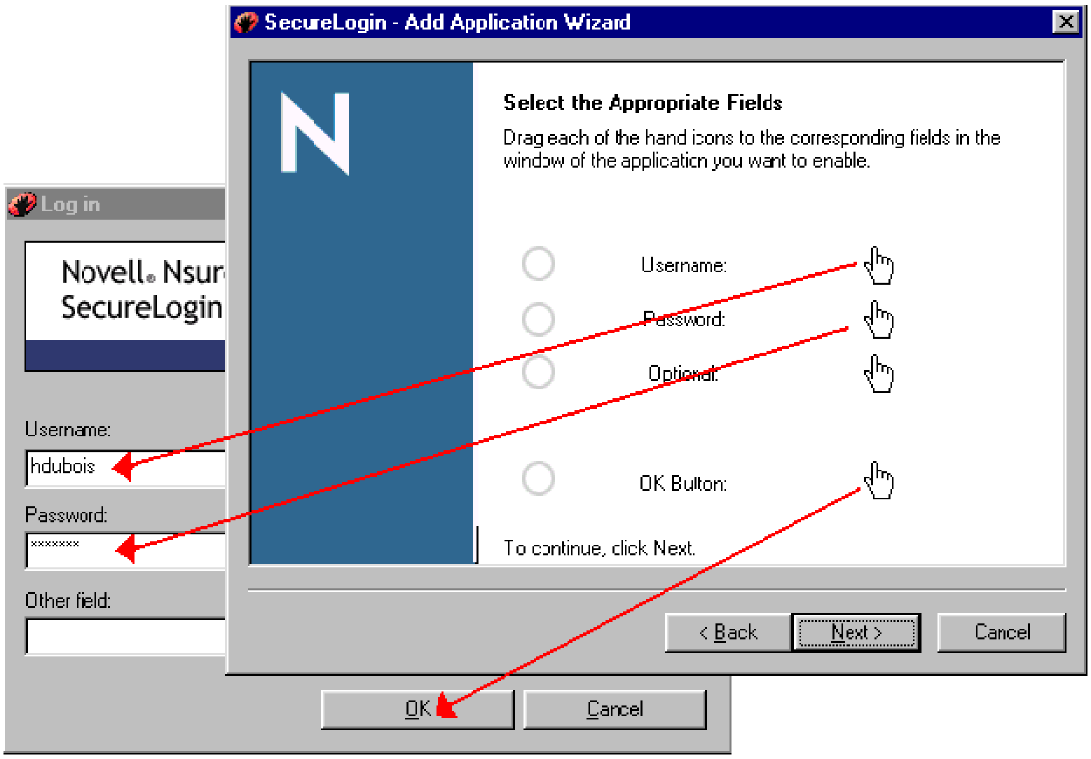
3d Click and drag the Add Application Wizard to one side of your screen, so that you can also view and work with the PasswordTest.exe dialog box.

3e Enter your username and password (novell) in the Password Text Application text boxes, but don't click OK.

IMPORTANT: The password for Password Test is "novell" until you change it. When you change the password, the new password is written to c:\passwordtest.txt. If you forget the current password, refer to this file or use Options > Display Password.

For this exercise, leave the Other Field text box blank.

3f Drag hands from the Add Application Wizard to the corresponding Username, Password, and OK fields in the Password Test Application.


SecureLogin - Add Application Wizard

Select the Appropriate Fields

Drag each of the hand icons to the corresponding fields in the window of the application you want to enable.

To continue, click Next.

Log in

Username: hdubois

Password: *******

Other field:

For this exercise, you don't need to drag a hand to the Other Field text box.

For additional details about the prompts and adding a login, see "Enabling a Windows Application" in the *Nsure SecureLogin 3.51.1 User Guide*.

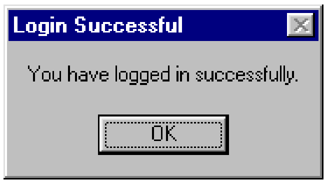
3g In the Add Application Wizard, click Next.

3h In the Confirm Login Details dialog box, click Next.

3i In the Name the Script window, select a descriptive name (for example, Password Test Application), then click Finish.

4 Finish logging in to the Password Test Application by clicking OK at the Log In dialog box.

The following window indicates a successful login.


Login Successful

You have logged in successfully.

If the login isn't successful, you probably entered your customary password instead of "novell." Right-click the SecureLogin icon on the system tray, click Manage Logins, click Applications, select the PasswordTest application, delete it, click OK to save the changes, then start over.

5 Verify that the script is working.

In the Password Test Application dialog box, click File > Log in. SecureLogin quickly types your stored username and password, clicks OK, logs you in, and again displays the Login Successful window.

Viewing the Wizard's Script

When you used the Add Application Wizard to create a login for Password Test, SecureLogin created a script for the application. You can view the script.

1 Right-click the SecureLogin icon on the system tray, click Manage Logins, then click Applications.

2 Click PasswordTest.exe > Edit > Script.

While you were using the Add Application Wizard earlier, SecureLogin created and saved this script for you. When you click File > Log in (in the Password Test Application), this script automatically logs you in to the Password Test Application. To gain experience with basic SecureLogin script commands, you will replace this script with one that you create.

Experimenting with a Script

Creating a Password Policy

Create a password policy named PwdTestPolicy.

1 Right-click the SecureLogin icon on the system tray, then click Manage Logins.

2 Click Password Policies > New.

3 Type PwdTestPolicy in the New Password Policy text box, then click OK.

The example script you will be working with in the Creating Your Own Script section requires a password policy called PwdTestPolicy.

4 Click PwdTestPolicy > Edit.

5 Click Minimum Password Length > Edit.

6 Type 6 in the Value text box, then click OK.

So that you can use "novell" as a password, the policy must require a minimum of 6 characters but no complex rules.

7 Click OK to save the policy, then click OK to save the data.

For additional information on creating a password policy, see "Creating or Editing a Password Policy" in the *Nsure SecureLogin 3.51.1 Administration Guide*.

Creating Your Own Script

During this exercise, you will create a script for the Password Test Application.

1 Delete PasswordTest.exe from the applications enabled for single sign-on in SecureLogin.

1a Right-click the SecureLogin icon on the system tray, then select Manage Logins.

1b Click Applications, then select PasswordText.exe.

1c Click Delete, click Yes, then click OK to save the changes to SecureLogin.

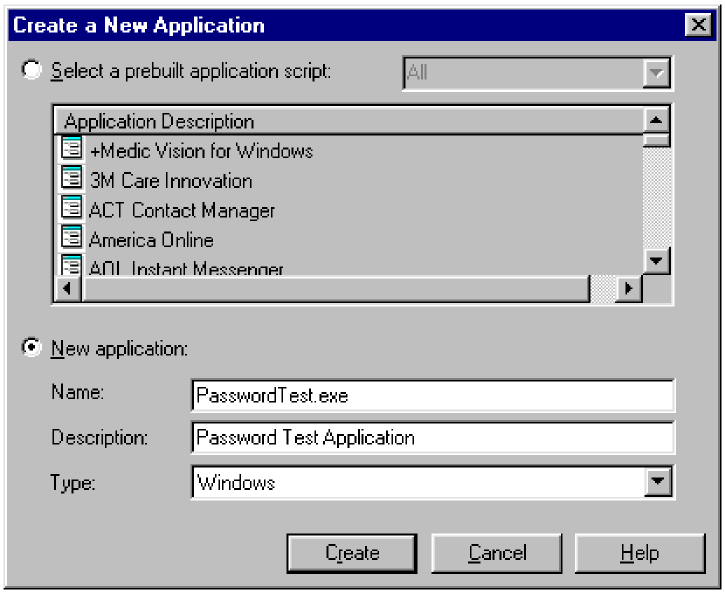
2 Create a new PasswordTest.exe application.

You will enable this application for single sign-on by creating a script.

2a Right-click the SecureLogin icon on the system tray, then select Manage Logins.

2b Click Applications > New.

2c In the Create a New Application dialog box, select New Application.


Create a New Application

Select a prebuilt application script: All

Application Description
- +Medic Vision for Windows
- 3M Care Innovation
- ACT Contact Manager
- America Online
- AOL Instant Messenger

New application: [✓]

Name: PasswordTest.exe

Description: Password Test Application

Type: Windows

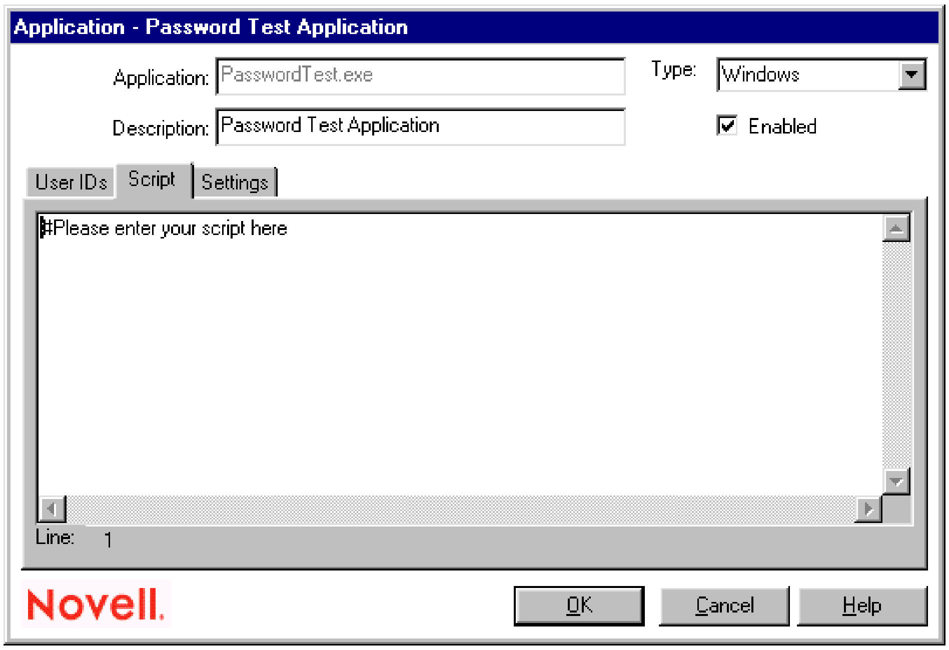
2d In the Name edit box, type PasswordTest.exe.

2e In the Description edit box, type Password Test Application.

2f Leave the default (Windows) as the Type, then click Create.

3 Click Script.

As the following figure illustrates, you are ready to type a script.



Application: PasswordTest.exe
Type: Windows
Description: Password Test Application
Enabled: ✓

```
#Please enter your script here
```

Line: 1

4 Type the Password Policy section.

Replace “#Please enter your script here” with the following lines:

```
# Set the password policy
RestrictVariable $Password PwdTestPolicy
```

RestrictVariable: This command restricts the $Password variable according to the restrictions you set in PwdTestPolicy.

For more information on this command, see “RestrictVariable” on page 83.

5 Type the Dialog/EndDialog block.

```
# ==== BeginSection: Login Window====
Dialog
   Class "#32770"
   Title "Log In"
EndDialog
```

Dialog/EndDialog: This block defines a Windows dialog box (a dialog box that pops up on the screen). When the dialog box appears, SecureLogin detects this dialog box based on the information found within the dialog block.

When passwordtest.exe runs, SecureLogin watches for dialog boxes that appear and matches the information defined between the Dialog/EndDialog commands.

Beginning script writers commonly ask how much information is required in the Dialog/EndDialog block. The block must have enough information for the block to be unique. Otherwise, the script runs when other dialog boxes owned by the same executable with the same information appear.

When SecureLogin detects that all the information between Dialog/EndDialog is contained in the dialog box on the screen (for example, an application login box, change password box, or failed logon box), SecureLogin runs the script commands until it sees the next dialog statement or the end of the script, whichever is applicable.

The order doesn't matter in Windows scripts. SecureLogin watches for all dialog boxes while the executable is running. For troubleshooting purposes, you'll most likely want to use a logical order.

For more information on this command, see "Dialog / EndDialog" on page 52.

Title: The Title command in the script identifies the title of the window that SecureLogin needs to enter information into. In this case, the title is "Log In".

For information on this command, see "Title" on page 101.

Class: The class of the Login window is #32770.

For information on this command, see "Class" on page 45.

6 Type information for the login window.

```
SetPrompt "Username:"
Type $Username #1001
SetPrompt "Password:"
Type $Password #1002
SetPrompt "Other:"
Type $Other #1003
Click #1
SetPrompt "Type missing information. SecureLogin remembers what you type
and automatically logs you in. IT Helpdesk x4546."

# ==== EndSection: Login Window ====
```

TIP: When entering long strings after SetPrompt, type the text continuously on one line. It doesn't wrap. If you press Enter to break the line, the SecureLogin script parser will report an error at Step 6.

SetPrompt: This command customizes the window that the user sees when the user has no credentials stored. When the user first runs a newly single-sign-on-enabled application, SecureLogin prompts the user for login credentials, stores those credentials, and remembers them for future login attempts.

For information on this command, see "SetPrompt" on page 93.

Type: The Username field is Control ID #1001, and the Password field is Control ID #1002. The script types the stored $Username variable into Control ID #1001 and types the stored $Password variable into Control ID #1002.

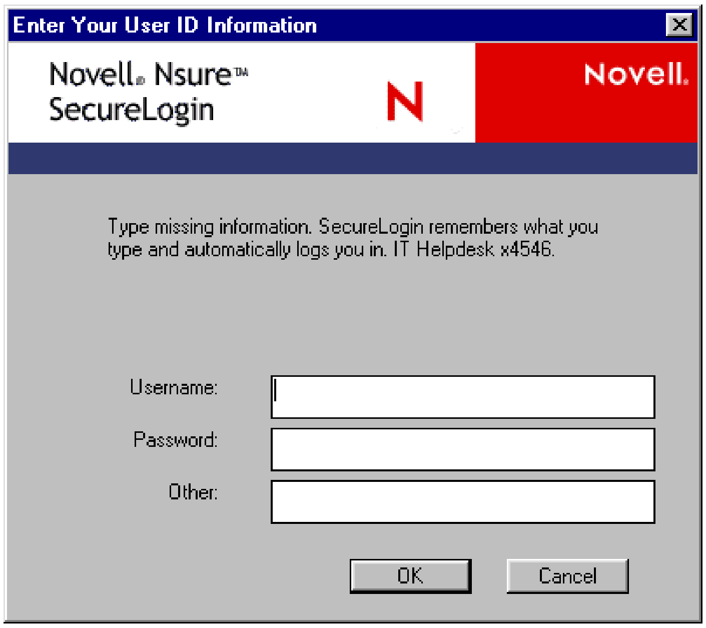
For information on this command, see "Type" on page 102.

Click: The OK button is Control ID #1. The Click command sends a click instruction to this Control ID.

For information on this command, see "Click" on page 48.

7 Close and save the script by clicking OK twice.

8 View the results of the script by clicking File > Log In in the Password Test Application.



Type missing information. SecureLogin remembers what you type and automatically logs you in. IT Helpdesk x4546.

Username:

Password:

Other:

This window appears because you haven't yet entered a username, password, or text for the Other field. SecureLogin will store the information and then automatically enter it as the new script calls for it.

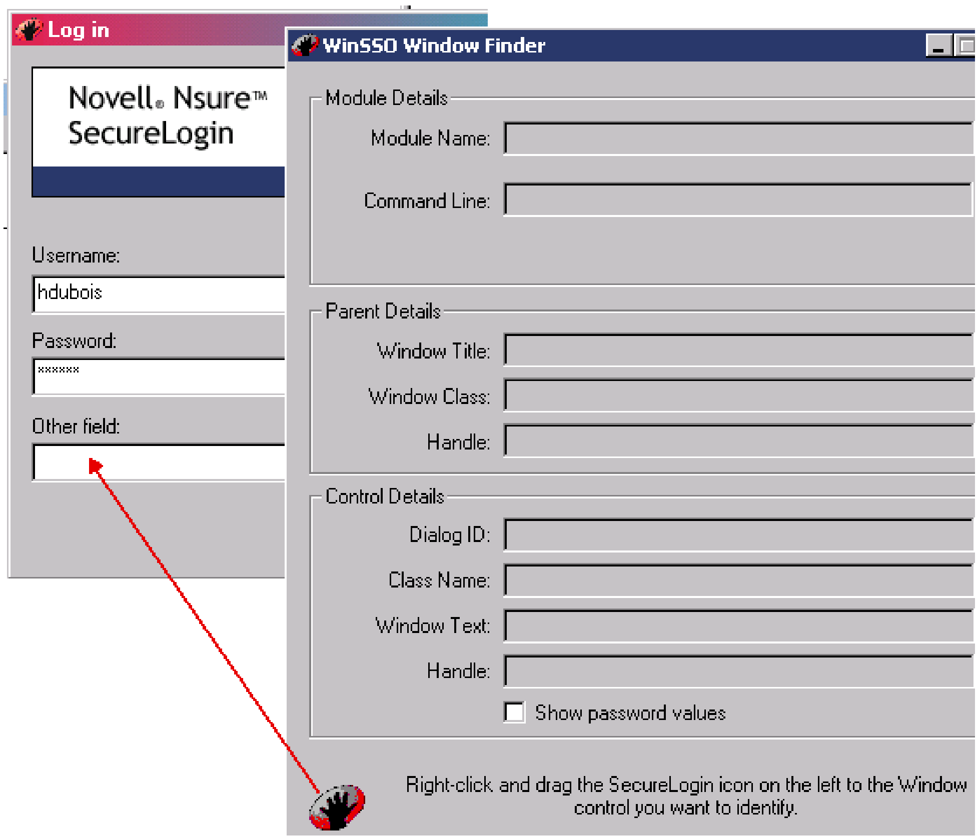
If the script contains an error, the Enter SecureLogin Variables dialog box doesn't appear. Instead, SecureLogin displays an error message, specifying the script line that contains the error. Return to the script and resolve the problem.

Before you enter a domain name and complete the login, use Window Finder to identify the Control ID of the Domain edit box.

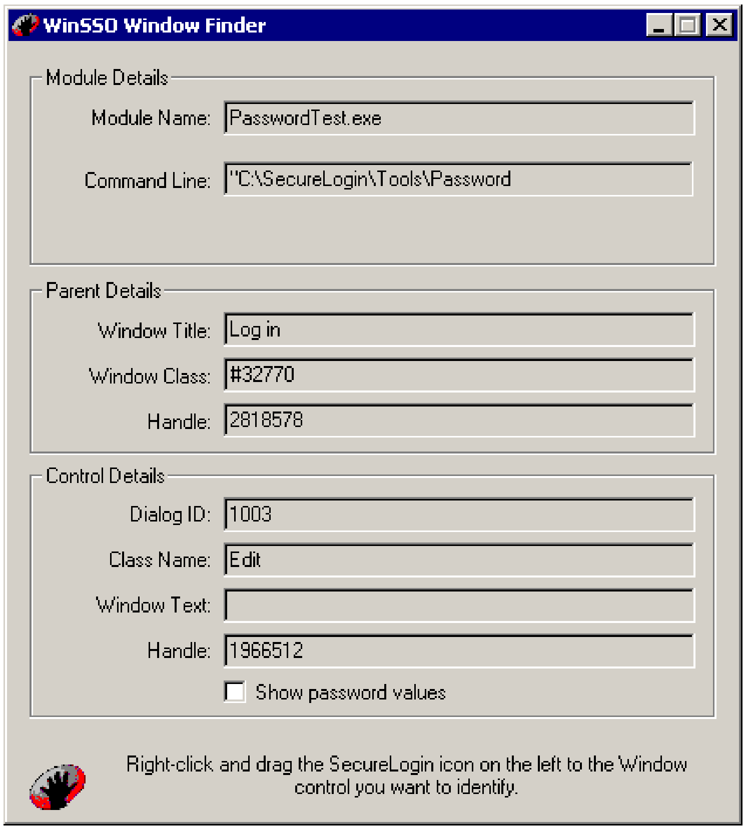
Experiment: Using Window Finder

Verify that the Other Field in the Login window is control ID 1003, which appears as #1003 in the script that you created.

1. Click Start > Programs > Novell SecureLogin > Window Finder.
2. Right-click the hand icon in Window Finder and drag it to the Other Field's edit box.



As the following figure illustrates, Window Finder displays the control ID (1003). After discovering a control ID number, you can type it in a script.


WinSSO Window Finder

Module Details

Module Name: PasswordTest.exe

Command Line: "C:\SecureLogin\Tools\Password

Parent Details

Window Title: Log in

Window Class: #32770

Handle: 2818578

Control Details

Dialog ID: 1003

Class Name: Edit

Window Text:

Handle: 1966512

☐ Show password values

Right-click and drag the SecureLogin icon on the left to the Window control you want to identify.

Adding a MessageBox

The MessageBox command helps you troubleshoot scripts. You can pinpoint problem lines in your script.

1 Add a MessageBox command after the # === EndSection: Login === line.

```
MessageBox "Completed the Login section. Ready for the Change Password
section."
```

2 Save and close the script by clicking OK twice.

3 Observe the feedback by logging in again to the Password Test Application.

If the message box doesn't appear, close and restart SecureLogin, then click File > Log In in the Password Test Application.

4 Exit the MessageBox feedback window by clicking OK.

Also close the Login Successful window.

For additional information on this command, see "MessageBox" on page 69.

Changing Passwords

1 Add a comment and the Dialog/EndDialog block for the Change Password section.

```
# ==== BeginSection: Change Password ====
# The Change-Password Dialog Box
Dialog
   Title "Change Password"
   Class "#32770"
EndDialog
```

2 Add a backup and ChangePassword block.

```
# Back up password, fill in the Old Username and Password, then start the
change password routine.
Set ?PwdBackup $Password
Type $Username #1015
Type $Password #1004
ChangePassword ?NewPwd "Enter a new password for Password Test."
Type ?NewPwd #1005
Type ?NewPwd #1006
Click #1
```

Set: For information on this command, see "Set" on page 86.

ChangePassword: For information on this command, see "ChangePassword" on page 44.

3 Add a message block.

```
# Change Password Successful message
Dialog
   Title "Change Successful"
   Class "#32770"
   Ctrl #65535 "You have changed the password successfully."
EndDialog
```

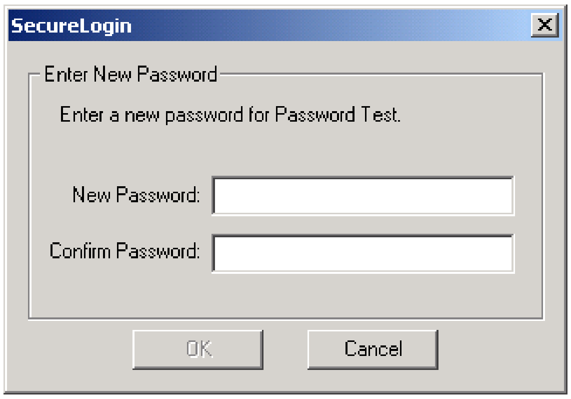
4 Add the remainder of the script.

```
# Clear the application-owned message and accept the new password
Click #2
Set $Password ?NewPwd
# ==== EndSection: Change Password ====
```

5 Save and close the script by clicking OK twice.

6 Click File > Change Password.

The following figure illustrates the Enter New Password dialog box that you specified in the script:


SecureLogin

Enter New Password

Enter a new password for Password Test.

New Password:

Confirm Password:

Move the Enter New Password window to one side of the screen so that you can observe behavior in the Change Password window.

7 Type and confirm the new password, then click OK.

Provide a password that meets the criteria specified in PwdTestPolicy.

7 Keystrokes and Functions

This section provides information on the following:

- "Sending Special Keystrokes" on page 119
- "@ Commands Used with Emulators" on page 120

Sending Special Keystrokes

SecureLogin can send special keyboard keystrokes to Windows and Internet applications that emulate the user's keyboard entry. These special commands include the ability to select Menu items and send Alt and other keyboard combinations.

To select a menu item within an application, you could use the following sequence:

Desired Result	**Sequence**
Select a file	Type \Alt+F
Select tools	Type T
Select Change Password	Type C

The following table illustrates keyboard sequences that you can use:

Desired Result	**Sequence**
Select a given option, where *x* is any key	Type \Alt+*x* Type \Ctr+*x* Type \Shift+*x*
Send the Backspace key	Type \B
Send the Delete key	Type \D
Send the End key	Type \E
Send the Home key	Type \H
Send the Enter key	Type \N
Sent the Print Screen key	Type \P
Send the Space key	Type \S

Desired Result	Sequence
Send the Tab key	Type \T
Send the Shift-Tab keys	Type \-T
Send the Space bar	Type |32 (The | keystroke is the pipe character.)
Send the End key	Type |35
Send the Home key	Type |36
Send the Left-arrow key	Type |37
Send the Up-arrow key	Type |38
Send the Right-arrow key	Type |39
Send the Down-arrow key	Type |40

@ Commands Used with Emulators

The following table lists the @ commands that you can use in the SecureLogin script Type. These commands perform specific emulator and mainframe functions. For example, you can send an Enter key, Tab key, or cursor, or issue a mainframe emulator print screen or reset function.

The Type Command	Meaning	The Type Command	Meaning
@B	Left Tab	@A@C	Test
@C	Clear	@A@D	Word Delete
@D	Delete	@A@E	Field Exit
@E	Enter	@A@F	Erase Input
@F	Erase EOF	@A@H	System Request
@H	Help	@A@I	Insert Toggle
@I	Insert	@A@J	Cursor Select
@J	Jump (Set Focus)	@A@L	Cursor Left Fast
@L	Cursor Left	@A@Q	Attention
@N	New Line	@A@R	Device Cancel (Cancels Print Presentation Space)
@O	Space	@A@T	Print Presentation Space
@P	Print	@A@U	Cursor Up Fast
@R	Reset	@A@V	Cursor Down Fast
@T	Right Tab	@A@Z	Cursor Right Fast

The Type Command	Meaning	The Type Command	Meaning
@U	Cursor Up	@A@9	Reverse Video
@V	Cursor Down	@A@b	Underscore
@X*	DBCS (Reserved)	@A@c	Reset Reverse Video
@Y	Caps Lock (No action)	@A@d	Red
@Z	Cursor Right	@A@e	Pink
@0	Home	@A@f	Green
@1	PF1/F1	@A@g	Yellow
@2	PF2/F2	@A@h	Blue
@3	PF3/F3	@A@i	Turquoise
@4	PF4/F4	@A@l	Reset Host Colors
@5	PF5/F5	@A@j	White
@6	PF6/F6	@A@t	Print (Personal Computer)
@7	PF7/F7	@A@y	Forward Word Tab
@8	PF8/F8	@A@z	Backward Word Tab
@9	PF9/F9	@A@-	Field -
@a	PF10/F10	@A@<	Record Backspace
@b	PF11/F11	@A@+	Field +
@c	PF12/F12	@S@x	Dup
@d	PF13	@S@E	Print Presentation Space or Host
@e	PF14	@S@y	Field Mark
@f	PF15	@X@c	Split Vertical Bar (¦)
@g	PF16	@X@7	Forward Character
@h	PF17	@X@6	Display Attribute
@i	PF18	@X@5	Generate SO/SI
@j	PF19	@X@1	Display SO/SI
@k	PF20	@M@0	VT Numeric Pad 0
@l	PF21	@M@1	VT Numeric Pad 1
@m	PF22	@M@2	VT Numeric Pad 2
@n	PF23	@m@3	VT Numeric Pad 3
@o	PF24	@M@4	VT Numeric Pad 4

The Type Command	Meaning	The Type Command	Meaning
@q	End	@M@5	VT Numeric Pad 5
@s	ScrLk (No action)	@M@6	VT Numeric Pad 6
@t	Num Lock (No action)	@M@7	VT Numeric Pad 7
@u	Page Up	@M@8	VT Numeric Pad 8
@v	Page Down	@M@9	VT Numeric Pad 9
@x	PA1	@M@-	VT Numeric Pad
@y	PA2	@M@,	VT Numeric Pad
@z	PA3	@M@.	VT Numeric Pad
@M@h	VT Hold Screen	@M@e	VT Numeric Pad Enter
@M@N	Control Code SO	@M@f	VT Edit Find
@M@M	Control Code CR	@M@i	VT Edit Insert
@M@L	Control Code FF	@M@r	VT Edit Remove
@M@K	Control Code VT	@M@s	VT Edit Select
@M@J	Control Code LF	@M@p	VT Edit Previous Screen
@M@I	Control Code HT	@M@n	VT Edit Next Screen
@M@H	Control Code BS	@M@a	VT PF1
@M@G	Control Code BEL	@M@b	VT PF2
@M@F	Control Code ACK	@M@c	VT PF3
@M@(space)	Control Code NUL	@M@d	VT PF4
@M@E	Control Code ENQ	@M@O	Control Code S1
@M@D	Control Code EOT	@M@Q	Control Code DC1
@M@C	Control Code ETX	@M@P	Control Code DLE
@M@B	Control Code STX	@M@A	Control Code SOH

8 Troubleshooting Scripts

This section provides information on the following;

Logging In to Web Sites

What's the best way to log in to Web sites?

Answer: Because SecureLogin recognizes a login panel on a Web page, the easiest method to create scripts for Web sites is to use the pop-up wizard. The second option is to run the wizard manually.

If for some reason you need to examine or modify scripts, you can use the following scripts to enable most HTML Web sites to use SecureLogin. Script One works for more than 95% of HTML Web pages.

Script One

```
Type $Username
Type $Password password
```

The `password` flag always follows the variable that contains the password.

If the first eight letters of a variable are `password`, the password is masked. If the first eight letters of a variable are not `Password`, the entry is displayed normally, unless the Web page masks the entry with asterisks.

The following table illustrates uses of the $password variable:

Command	Variable	Result
Type	$password password	Enters the value of the variable $password and displays asterisks because the first eight letters of the variable are `password`.
Type	$juanspassword password	Enters the value of the variable $juanspassword, but not as asterisks, unless the Web page masks the entry with asterisks.
Type	$password4juan password	Enters the value of the variable $password and displays asterisks because the first eight letters of the variable are `password`.

Script Two

```
Type $Username #1
Type $Password #2
Click #1
```

This script is also successful for Web sites. The parameter #1 instructs SecureLogin to enter the value of the variable $password into the first (from top to bottom) entry field on the page.

TIP: If a Web page uses frames, “top to bottom” might not be obvious. In this case, try different numbers until one works.

The parameter #2 instructs SecureLogin to enter the value of the variable $password into the second entry file on the page.

Using the #1 parameter with the click command instructs SecureLogin which button on the page to click.

The script submits automatically. If a problem occurs, use the following commands:

- Type \N

  This option presses Enter.

- Type \n *control position* (for example, Type \N #1)

  This option presses Enter for the specified button for field number. You can also try changing the #1 to #2, #3, and so on to make sure that SecureLogin presses the correct button.

- Click *control position* (for example, Click #2)
- “Submit”

  This option forces a submit.

Deriving Application Names from Strings

Why do I get error -217 when logging in to a Web site?

Answer: The application name is derived from text strings in the login screen (for example, VERDE CENTRAL VMP or Clarify LODGE lodge).

When loaded into a temporary variable, these values work as expected in SetPlat statements and If-Exists statements (for example, SetPlat ?Clarify). However, if the literal value is used in an If-Exists statement in a Web script, error -217 occurs.

The following script shows the problem:

```
If-Exists $Username(Clarify LODGE lodge)
MessageBox a
Else
MessageBox b
EndIf
```

If you modify the first line as follows, the script works. You won’t receive an error.

```
If-Exists "$Username(Clarify LODGE lodge)"
```

IMPORTANT: Use quotation marks around the string that follows If-Exists.

Using the -NoEdit Switch

In the SecureLogin 3.51 release, the -NoEdit switch required you to use NoEdit.

However, for the SecureLogin 3.51.1 release, use -NoEdit (with a hyphen).

Using Microsoft JVM and Internet Explorer

If you are running Microsoft JVM and Internet Explorer, place a Class or Ctrl command (or both) at the beginning of each Dialog/EndDialog statement for any Java application scripts and the iexplore.exe script.

For example, type

```
Dialog
   Class #32770
   Title "Login"
   Ctrl #65535 "Enter Login information"
EndDialog
```

Failure to follow this procedure when using the Microsoft JVM instead of the SUN JVM will result in the following symptoms:

After SecureLogin has logged into a Java-based application or Web page, SecureLogin no longer interacts with any Win32-based applications. SecureLogin appears to stop working because the Microsoft JVM is not replying to the calls that SecureLogin makes to gather title information. Therefore, SecureLogin waits for the JVM to reply. Because the JVM doesn't reply, SecureLogin continues to wait, and will wait endlessly.

Closing the Java Web page or application causes SecureLogin to stop waiting and start responding to Win32-based applications again. In a future update, SecureLogin will timeout on the request if it receives no response in a specified time.

A Quick-Reference Chart

This section provides a quick-reference chart of commands used in SecureLogin scripts. The chart lists the following:

- The platform that the command is used with (Startup scripts, Terminal Launcher, Web, Windows, or Java)
- The type of command (action, dialog specifier, flow control, or variable manipulator)
- The SecureLogin version that the command is used with (All, 2.5 and later, 3.0, or 3.0.4, 3.5,)

Command	Use With	Type	SecureLogin Version
AAVerify	SS, TL, Web, Win	Action	All
Add	SS, TL, Web, Win	Variable manipulator	3.0
Attribute	Advanced Web Script	Specifier	3.5
BeginSplashScreen	TL	Action	3.0.4
Break	SS, TL, Web, Win	Action	2.5
Call	SS, TL, Web, Win	Flow control	2.5
ChangePassword	SS, TL, Web, Win	Action	All
Class	SS, Win	Dialog specifier	All
ClearPlat	SS, TL, Web, Win	Action	3.51.1
Click	Java, Web, Win	Action	All
ConvertTime	SS, TL, Web, Win	Variable manipulator	3.0.4
Ctrl	Java, SS, Win	Dialog specifier	All
Delay	All	Action	All
Dialog/EndDialog	Java, Win	Dialog specifier	All
DisplayVariables	All	Action	All
Divide	SS, TL, Web, Win	Variable manipulator	3.0
DumpPage	Advanced Web Script	Action	3.5
EndScript	SS, TL, Web, Win	Action	All
Event	Win	Dialog specifier	3.5

Command	Use With	Type	SecureLogin Version
GetCheckBoxState	Advanced Web Script	Action	3.5
GetCommandLine	SS, Win	Action	3.0.4
GetEnv	All	Action	3.5
GetIni	Java, TL, Web, Win	Action	3.5
GetReg	All	Action	3.5
GetSessionName	Terminal Emulator	Action	3.5
GetText	TL, Web	Action	3.0
GetURL	Web	Action	3.0
GoToURL	Web	Action	2.5
If/Else/EndIF	SS, TL, Web, Win	Flow control	All
Include	All	Flow control	3.0
Increment/Decrement	All	Variable manipulator	All
KillApp	All	Action	All
Local	All	Variable manipulator	3.0
MessageBox	SS, TL, Web, Win	Action	All
Multiply	All	Variable manipulator	3.0
OnException	All	Flow control	3.0.4
Parent/EndParent	Win	Dialog specifier	All
PickListAdd	All	Action	All
PickListDisplay	SS, TL, Web, Win	Action	All
PositionCharacter	Password Policy Scripts	Action	All
ReadText	TL, Win	Action	All
RegSplit	All	Action	All
ReloadPlat	SS, TL, Web, Win	Action	3.51.1
Repeat/EndRepeat	All	Flow control	All
RestrictVariable	All	Action	All
Run	SS, TL, Web, Win	Action	All
SelectListBoxItem	Advanced Web Script	Action	3.5
SendKey	TL	Action	All
Set	All	Variable manipulator	All

Command	Use With	Type	SecureLogin Version
SetCheckBox	Advanced Web Script	Action	3.5
SetCursor	TL (HLLAPI, some DDE)	Action	All
SetFocus	Java, Web, Win	Action	All
SetPlat	All	Action	All
SetPrompt	All	Action	All
StrCat	All	Variable manipulator	All
StrLength	All	Variable manipulator	3.0.4
StrLower	All	Variable manipulator	3.0.4
StrUpper	All	Variable manipulator	3.0.4
Sub/EndSub	SS, TL, Web, Win	Flow control	2.5
Submit	Web	Action	3.0
Subtract	SS, TL, Web, Win	Variable manipulator	3.0
Tag/EndTag	Advanced Web Script	Action	3.5
Title	Java, Win	Dialog specifier	All
Type	Java, TL, Web, Win	Action	All
WaitForFocus	Win	Flow control	All
WaitForText	TL	Flow control	All

B FAQs on Scripting

This section provides information on the following:

- "One Script, Two Sets of Credentials" on page 131
- "Cache All Passwords, Prompt for Each Application" on page 131

One Script, Two Sets of Credentials

Question: How do you use the same script to use one set of credentials for login to a Web URL, and then when it redirects to another page without changing the URL address, have it present another set of credentials?

Answer: Use the setplat command as part of the script. When you recognize where you are on the correct Web page, issue a setplat command to set the user ID and Password to the field that you require. Then use the Type command to enter that detail.

Cache All Passwords, Prompt for Each Application

Question: My company would like SecureLogin to cache all passwords in Novell® eDirectory™, but we would like to have SecureLogin prompt for either the Passphrase or the eDirectory password each time someone opens an application.

In essence this would give users the impression that they have one password for all their applications. Is this feasible, or would it cause too much overhead in authenticating to the network?

Answer: Try one of the following:

- Store and compare a variable.
  1. Instead of inputting the application password, prompt the user for input.
  2. Store the input as a new variable (for example, $*Inputpw*).
  3. Compare this variable with ?Syspassword.
  4. If the variable is true, input $Password into the correct field.
- Use AAVERIFY to prompt for the eDirectory password.

C Trapping SNMP Alerts

SecureLogin is able to produce SNMP alerts so that network monitoring software can trap them. A simple script command sends the alerts upon any event you want.

NOTE: For SNMP support to work, you might have to copy the libsnmp.dll file to the Windows\System32 directory.

Producing an Alert

To produce an SNMP alert, place the following command in the script where you want the alert to be created:

```
Run c:\Progra~1\Novell\Secure~1\slsnmp.exe Community Name Host IP Address
Text
```

- *Community Name* is the case-sensitive community name that this computer will send trap messages to.
- *Host IP Address* is the IP address of the SNMP host.
- *Tex*t is the text to be displayed as the message at the host.

Example Script

```
Dialog
  Class #32770
  Title "Incorrect Password"
EndDialog

Run C:\Progra~1\Novell\Secure~1\Slsnmp.exe SNMPCommunity1 192.168.156.23
"PSL - Incorrect password in finance system."
MessageBox "You have entered an incorrect password. The administrator has been
notified. Restart the application and try again."
KillApp "PasswordText.exe"
```

D Keyboard Functions and Codes

The following table is a reference on keyboard functions from within Windows. You can use these functions with the Type command.

Function	Decimal	Comment/Information
Left mouse button	1	
Right mouse button	2	
Ctrl-Break	3	
Middle mouse button	4	
X1 mouse button	5	
X2 mouse button	6	
Backspace	8	
Tab	8	
Clear	12	5 on the keypad
Enter	13	
Shift	16	
Ctrl	17	
Alt	18	
Pause	19	
Cap Lock	20	
Escape	27	
Space	32	
Page Up	33	
Page Down	34	
End	35	
Home	36	
Left-arrow	37	
Up-arrow	38	

Function	Decimal	Comment/Information
Right-arrow	39	
Down-arrow	40	
Select	41	
Execute	43	
Print Screen	44	
Insert	45	
Delete	46	
Help key	47	
0	48	
1	49	
2	50	
3	51	
4	52	
5	53	
6	54	
7	55	
8	56	
9	57	
A	65	
B	66	
C	67	
D	68	
E	69	
F	70	
G	71	
H	72	
I	73	
J	74	
K	75	
L	76	

Function	Decimal	Comment/Information
M	77	
N	78	
O	79	
P	80	
Q	81	
R	82	
S	83	
T	84	
U	85	
V	86	
W	87	
X	88	
Y	89	
Z	90	
Left Windows key	91	
Right Windows key	92	
Application key	93	
Sleep key	94	
Keypad 0	96	
Keypad 1	97	
Keypad 2	98	
Keypad 3	99	
Keypad 4	100	
Keypad 5	101	
Keypad 6	102	
Keypad 7	103	
Keypad 8	104	
Keypad 9	105	
Keypad Asterisk (*)	106	
Keypad plus sign (+)	107	

Function	Decimal	Comment/Information
Keypad Separator	108	
Keypad minus sign (-)	109	
Keypad period (.)	110	
Keypad backward slash (/)	111	
F1 key	112	
F2 key	113	
F3 key	114	
F4 key	115	
F5 key	116	
F6 key	117	
F7 key	118	
F8 key	119	
F9 key	120	
F10 key	121	
F11 key	122	
F12 key	123	
F13 key	124	
F14 key	125	
F15 key	126	
F16 key	127	
F17 key	128	
F18 key	129	
F19 key	130	
F20 key	131	
F21 key	132	
F22 key	133	
F23 key	134	
F24 key	135	
Num Lock	144	
Scroll Lock	145	

Function	Decimal	Comment/Information
Left Shift	160	
Right Shift	161	
Left Ctrl	162	
Right Ctrl	162	
Left menu	164	
Right menu	**165**	
Browser Back key	166	Windows 2000 or later required
Browser Forward key	167	Windows 2000 or later required
Browser Refresh key	168	Windows 2000 or later required
Browser Stop key	169	Windows 2000 or later required
Browser Search key	170	Windows 2000 or later required
Browser Favorites key	171	Windows 2000 or later required
Browser Start and Home key	172	Windows 2000 or later required
Volume Mute key	173	Windows 2000 or later required
Volume Down key	174	Windows 2000 or later required
Volulme Up key	175	Windows 2000 or later required
CD Next Track key	176	Windows 2000 or later required
CD Previous Track key	177	Windows 2000 or later required
CD Stop Media key	178	Windows 2000 or later required
CD Play/Pause key	179	Windows 2000 or later required
Launch Mail key	180	Windows 2000 or later required
Media Select key	181	Windows 2000 or later required
Start Application 1 key	182	Windows 2000 or later required
Start Application 2 key	183	Windows 2000 or later required
;	186	Semicolon/colon
=	187	Equals/plus
,	188	Comma/less than
-	189	Minus/underscore
.	190	Period/greater than
/	191	Slash/question mark

Function	Decimal	Comment/Information
‘	192	Single open quote/tilde
[	219	Left square/brace
\	220	Back slash/pipe
]	221	Right square/brace
’	222	Single close quote/double quote
Play key	250	
Zoom key	251	

E Event Specifiers

The following table illustrates Windows application events that you can monitor by using the Event command.

Event	Event	Event
BM_CLICK	EM_GETTHUMB	SBM_GETSCROLLINFO
BM_GETCHECK	EM_GETWORDBREAKPROC	SBM_SETSCROLLINFO
BM_GETIMAGE	EM_LIMITTEXT	STM_GETICON
BM_GETSTATE	EM_LINEFROMCHAR	STM_GETIMAGE
BM_SETCHECK	EM_LINEINDEX	STM_MSGMAX
BM_SETIMAGE	EM_LINELENGTH	STM_SETICON
BM_SETSTATE	EM_LINESCROLL	STM_SETIMAGE
BM_SETSTYLE	EM_POSFROMCHAR	WM_ACTIVATE
EM_CANUNDO	EM_REPLACESEL	WM_ACTIVATEAPP
EM_CHARFROMPOS	EM_SCROLL	WM_AFXFIRST
EM_EMPTYUNDOBUFFER	EM_SCROLLCARET	WM_AFXLAST
EM_FMTLINES	EM_SETHANDLE	WM_APP
EM_GETFIRSTVISIBLELINE	EM_SETIMESTATUS	WM_ASKCBFORMATNAME
EM_GETHANDLE	EM_SETMARGINS	WM_CANCELJOURNAL
EM_GETIMESTATUS	EM_SETMODIFY	WM_CANCELMODE
EM_GETLIMITTEXT	EM_SETPASSWORDCHAR	WM_CAPTURECHANGED
EM_GETLINE	EM_SETREADONLY	WM_CHANGECBCHAIN
EM_GETLINECOUNT	EM_SETRECT	WM_CHAR
EM_GETMARGINS	EM_SETRECTNP	WM_CHARTOITEM
EM_GETMODIFY	EM_SETSEL	WM_CHILDACTIVATE
EM_GETPASSWORDCHAR	EM_SETTABSTOPS	WM_CLEAR
EM_GETRECT	EM_SETWORDBREAKPROC	WM_CLOSE
EM_GETSEL	EM_UNDO	WM_COMMAND

Event	Event	Event
WM_COMPACTING	WM_EXITMENULOOP	WM_LBUTTONUP
WM_COMPAREITEM	WM_EXITSIZEMOVE	WM_MBUTTONDBLCLK
WM_CONTEXTMENU	WM_FONTCHANGE	WM_MBUTTONDOWN
WM_COPY	WM_GETDLGCODE	WM_MBUTTONUP
WM_COPYDATA	WM_GETFONT	WM_MDIACTIVATE
WM_CREATE	WM_GETHOTKEY	WM_MDICASCADE
WM_CTLCOLORBTN	WM_GETICON	WM_MDICREATE
WM_CTLCOLORDLG	WM_GETMINMAXINFO	WM_MDIDESTROY
WM_CTLCOLOREDIT	WM_GETOBJECT	WM_MDIGETACTIVE
WM_CTLCOLORLISTBOX	WM_GETTEXT	WM_MDIICONARRANGE
WM_CTLCOLORMSGBOX	WM_GETTEXTLENGTH	WM_MDIMAXIMIZE
WM_CTLCOLORSCROLLBAR	WM_HANDHELDFIRST	WM_MDIRESTORE
WM_CTLCOLORSTATIC	WM_HANDHELDLAST	WM_MDISETMENU
WM_CUT	WM_HELP	WM_MDITILE
WM_DEADCHAR	WM_HOTKEY	WM_MEASUREITEM
WM_DELETEITEM	WM_HSCROLL	WM_MENUCHAR
WM_DESTROY	WM_HSCROLLCLIPBOARD	WM_MENUCOMMAND
WM_DESTROYCLIPBOARD	WM_ICONERASEBKGND	WM_MENUDRAG
WM_DEVICECHANGE	WM_INITDIALOG	WM_MENUGETOBJECT
WM_DEVMODECHANGE	WM_INITMENU	WM_MENURBUTTONUP
WM_DISPLAYCHANGE	WM_INITMENUPOPUP	WM_MENUSELECT
WM_DRAWCLIPBOARD	WM_INPUTLANGCHANGE	WM_MOVE
WM_DRAWITEM	WM_INPUTLANGCHANGEREQUEST	WM_MOVING
WM_DROPFILES	WM_KEYDOWN	WM_NCACTIVATE
WM_ENABLE	WM_KEYFIRST	WM_NCCALCSIZE
WM_ENDSESSION	WM_KEYLAST	WM_NCCREATE
WM_ENTERIDLE	WM_KEYUP	WM_NCDESTROY
WM_ENTERMENULOOP	WM_KILLFOCUS	WM_NCHITTEST
WM_ENTERSIZEMOVE	WM_LBUTTONDBLCLK	WM_NCLBUTTONDBLCLK
WM_ERASEBKGND	WM_LBUTTONDOWN	WM_NCLBUTTONDOWN

Event	Event	Event
WM_NCLBUTTONUP	WM_PRINT	WM_SPOOLERSTATUS
WM_NCMBUTTONDBLCLK	WM_PRINTCLIENT	WM_STYLECHANGED
WM_NCMBUTTONDOWN	WM_QUERYDRAGICON	WM_STYLECHANGING
WM_NCMBUTTONUP	WM_QUERYENDSESSION	WM_SYNCPAINT
WM_NCMOUSEMOVE	WM_QUERYNEWPALETTE	WM_SYSCHAR
WM_NCPAINT	WM_QUERYOPEN	WM_SYSCOLORCHANGE
WM_NCRBUTTONDBLCLK	WM_QUEUESYNC	WM_SYSCOMMAND
WM_NCRBUTTONDOWN	WM_QUIT	WM_SYSDEADCHAR
WM_NCRBUTTONUP	WM_RBUTTONDBLCLK	WM_SYSKEYDOWN
WM_NEXTDLGCTL	WM_RBUTTONDOWN	WM_SYSKEYUP
WM_NEXTMENU	WM_RBUTTONUP	WM_TCARD
WM_NOTIFY	WM_RENDERALLFORMATS	WM_TIMECHANGE
WM_NOTIFYFORMAT	WM_RENDERFORMAT	WM_TIMER
WM_NULL	WM_SETCURSOR	WM_UNDO
WM_PAINT	WM_SETFOCUS	WM_UNINITMENUPOPUP
WM_PAINTCLIPBOARD	WM_SETFONT	WM_USER
WM_PAINTICON	WM_SETHOTKEY	WM_USERCHANGED
WM_PALETTECHANGED	WM_SETICON	WM_VKEYTOITEM
WM_PALETTEISCHANGING	WM_SETREDRAW	WM_VSCROLL
WM_PARENTNOTIFY	WM_SETTEXT	WM_VSCROLLCLIPBOARD
WM_PASTE	WM_SHOWWINDOW	WM_WINDOWPOSCHANGED
WM_PENWINFIRST	WM_SIZE	WM_WINDOWPOSCHANGING
WM_PENWINLAST	WM_SIZECLIPBOARD	WM_WININICHANGE
WM_POWER	WM_SIZING	

F Error Codes

This section contains error codes for Terminal Launcher.

For a full list of SecureLogin error codes, see "Error Codes" in the *Nsure SecureLogin 3.51.1 Administration Guide*.

Error Codes with Tips

-102 BROKER_NO_SUCH_ENTRY

Possible Cause:	You tried to load a script or variable that doesn't exist. For example, you set up Terminal Launcher to run from a shortcut or to run a particular script, but the script doesn't exist.
Action:	Check that the name of the script is actually defined is SecureLogin. Verify that the name is the same as specified in the script editor.

-220 BROKER_HLLAPI_FUNCTION_NOT_FOUND

Possible Cause:	You used an incorrect function when you defined the emulator. In the Terminal Launcher configuration, you specified a HLLAPI.DLL and the name of the function in that DLL. The name of the function cannot be found in the DLL.
Action:	Using the *Nsure SecureLogin 3.51.1 Guide for Terminal Emulation* on the Novell Documentation Web site (http://www.novell.com/documentation), check the configuration for the emulator. Make sure that you typed the HLLAPI function correctly.

-222 BROKER_HLLAPI_DLL_LOAD_FAILED

Possible Cause:	Terminal Launcher was unable to load the HLLAPI.DLL that you specified.
Action:	Make sure that the path and file that you entered for the DLL are correct.
Possible Cause:	The HLLAPI.DLL for that emulator is looking for other DLL files that don't exist or haven't been installed for that emulator.
Action:	You have probably chosen the wrong .DLL file or have specified the wrong HLLAPI function (for example, HLLAPI or WinHLLAPI). Find the correct .dll and function. Check the vendor's documentation for information about that emulator. To find control IDs, see "Finding Control IDs and Offsets of an Emulator" in the *Nsure SecureLogin 3.51.1 Administration Guide*.

-224 BROKER_ERROR_DURING_WINHLLAPICLEANUP

Possible Cause:	Terminal Launcher has called the WinHLLAPI cleanup function for a WinHLLAPI emulator.

Action: Check the vendor's documentation for information about that emulator.

-225 BROKER_CANNOT_FIND_WINHLLAPISTARTUP_FUNCTION_IN_DLL

Possible Cause: In the Terminal Launcher configuration, you incorrectly specified that the emulator is a WinHLLAPI emulator.

Action: Using the *Nsure SecureLogin 3.51.1 Guide for Terminal Emulation* on the Novell Documentation Web site (http://www.novell.com/documentation), check the configuration for the emulator. Specify the correct emulator type.

-226 BROKER_ERROR_DURING_WINHLLAPISTARTUP

Action: Check the vendor's documentation for information about that emulator.

-227 BROKER_CANNOT_FIND_WINHLLAPICLEANUP_FUNCTION_IN_DLL

Possible Cause: In the Terminal Launcher configuration, you incorrectly specified that the emulator is a WinHLLAPI emulator.

Action: Using the *Nsure SecureLogin 3.51.1 Guide for Terminal Emulation* on the Novell Documentation Web site (http://www.novell.com/documentation), check the configuration for the emulator. Specify the correct emulator type.

-264 BROKER_DDE_CONNECT_FAILED

Possible Cause: Terminal Launcher couldn't connect to a specified DDE emulator.

Action: Make sure that the emulator launched correctly and the emulator's DDE support is turned on.

-273 BROKER_MSTELNET_OPERATION_NOT_SUPPORTED

Possible Cause: The generic emulator can't support a particular operation (for example, SetCursor).

Action: For generic emulators, don't use the command.

-279 BROKER_EMULATOR_LAUNCH_FAILED

Possible Cause: In Terminal Launcher, you can configure the path to the executable that will run. However, the specified executable is unable to run.

Action: Make sure that the path to the emulator is correct.

-280 BROKER_UNABLE_TO_CREATE_EMULATOR

Possible Cause: You have specified an invalid terminal type in TLAUNCH.INI (or the Terminal Launcher configuration).

Action: Specify the correct terminal type.

-281 BROKER_INVALID_CHARACTER_FOUND_IN_PASTE_ID_LIST

Possible Cause: A comma doesn't separate decimal numbers for input and output control IDs.

Action: For generic emulators, you must specify a set of input and output control IDs. Use a comma to separate decimal numbers.

-282 BROKER_INVALID_CHARACTER_FOUND_IN_COPY_ID_LIST

Possible Cause: A comma doesn't separate decimal numbers for copy IDs

Action: For generic emulators, you must specify a set of copy control IDs. Use a comma to separate decimal numbers.

-283 BROKER_UNABLE_TO_READ_TLAUNCH_INI

Possible Cause: SecureLogin is unable to read the tlaunch.ini file because the file has been deleted.

Action: Create a blank tlaunch.ini file.

Action: Create a default tlaunch.ini file by reinstalling SecureLogin.

-284 BROKER_NO_TERMINAL_TYPE_DEFINED

Possible Cause: The tlaunch.ini file contains an error. The terminal type for the emulator has not been defined.

Action: Using Terminal Launcher, specify a terminal type for the emulator.

-290 BROKER_FILE_LOAD_FAILED

Possible Cause: You don't have enough rights to convert an earlier tlaunch.ini file to a later format, read an earlier tlaunch.ini file, or create a new tlaunch.ini file.

Action: The network administrator must assign necessary rights.

-349 BROKER_UNABLE_TO_FIND_SESSION_FILE

Possible Cause: Terminal Launcher couldn't find a session file for an emulator.

Action: Configure Terminal Launcher to have the correct path to the file for the emulator session.

-356 BROKER_INVALID_CHARACTER_FOUND_IN_STARTUP_ID_LIST

Possible Cause: For generic emulators, you specify the startup control ID. A comma must separate a list of numbers. You have used a character other than a comma.

Action: Remove unacceptable characters.

-373 BROKER_HLLAPI_CONNECT_FAILED

Possible Cause: Terminal Launcher couldn't find the function name and was therefore unable to connect to the emulator. The function name is probably wrong.

Action: Make sure that the emulator has HLLAPI enabled.

-380 BROKER_HLLAPI_NOT_CONNECTED_TO_PS

Possible Cause: You haven't configured your emulator for an HLLAPI session. Terminal Launcher tried to use a HLLAPI function. However, the HLLAPI DLL is not connected to the emulator presentation space.

Action: Make sure that Terminal Launcher is set up correctly with the emulator.

-381 BROKER_HLLAPI_SPECIFYING_PARAMETERS_ERROR

Possible Cause: Incorrect parameters were given to a command that uses a HLLAPI function.

Action: Contact Novell Technical Services.

-382 BROKER_HLLAPI_INVALID_PS_POSITION

Possible Cause: Terminal Launcher was able to initialize the emulator but was unable to read the contents of the screen. An attempt was made to move the cursor or read text from an invalid (out of bounds) position on the emulator presentation space.

Action: Correct the positioning parameter in the script.

-383 BROKER_HLLAPI_SYSTEM_ERROR

Possible Cause: Terminal Launcher is not configured correctly for the emulator.

Action: Make sure that Terminal Launcher is set up correctly with the emulator and that the emulator correctly supports HLLAPI.

-384 BROKER_HLLAPI_PS_BUSY_ERROR

Possible Cause: A HLLAPI function is being called while the emulator presentation space is unavailable.

Action: Make sure that the emulator is not being used by other HLLAPI applications.

-385 BROKER_HLLAPI_INPUT_REJECTED

Possible Cause: The emulator rejected an attempt to input data into the emulator presentation space.

Action: Make sure that the emulator presentation space is not locked.

-386 BROKER_HLLAPI_ERROR_QUERYING_SESSIONS

Possible Cause: SecureLogin is unable to query available HLLAPI sessions.

Action: Make sure that Terminal Launcher is set up correctly with the emulator.