

CASLide

User's Manual

Version 4.3

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CASLide Overview

The CASL Interactive Development Environment (CASLide) turns your Windows PC into a “workbench” on which you can create, test, and modify the CASL applications you build for your PalmPilot. Every step of the process, from idea to application, can be performed from within the development environment.

CASLide provides a multi-windowed editing facility, allowing you to work on more than one CASL source file simultaneously. This allows you to not only create programs from scratch, but to cut and paste source code from other CASL programs that you’ve written, or downloaded from the CASLsoft web page.

CASLide also provides a forms builder that allows you to construct user interfaces for your application by selecting CASL display objects (buttons, text boxes, etc.) from a tool bar and dropping them on the display form. The display objects can be moved and resized using the mouse.

CASLide allows you to invoke the CASL compiler, to check for syntax errors (in the early stages of a program’s life) or to generate p-code, for execution on the Windows PC, PalmOS device or PocketPC device. As compile errors are encountered, they are displayed in a fully dockable sub-window, in such a way that if the error messages are double clicked, the associated error in the CASL source file will be positioned to and marked.

For applications that you wish to distribute publicly or simply wish to appear on the PalmPilot’s main screen, CASLide provides a tool that allows you to convert the CASL compiler’s p-code output into a PalmPilot “program resource” file (*.PRC file). This feature requires the selection of a CREATOR ID and desktop name for unique identification as a PalmPilot application.

After successful testing on your Windows PC, CASLide also allows you to install your application for download in the Palm or PocketPC device.

In the chapters that follow, these features are discussed in more detail, to provide you with the tools necessary to get started on your first CASL application for your PalmPilot.

What's New In CASLide 4.3

Changes from CASLide Version 4.1 & 4.2:

- High Resolution forms, bitmaps and icons for PalmOS
- ActiveSync support for PocketPC
- Added two transfer utilities, CASLcdi2ppc and CASLppc2cdb to allow one-way transfers of CASL databases to the PC/Desktop.
- Improved support for CASL Setup on Windows Mobile 5 devices.
- By pressing CTL+SPACE within the CASL 4.3 IDE, a new function, object, and global variable browser will appear. This will allow you to easily see the functions, parameters and return value data types.
- When compiling applications, CASL will now show the number of CASL objects in the build window (Example: 'Total Number CASL Objects = 125'). If the number of objects within the CASL application exceeds the maximum number allowed (644) an error will be generated.

CASLide User Interface

There are a number of ways that you can control the operation of CASLide:

- Pressing control, Alt, and shortcut key sequences.

- Using the command toolbar Icons.

- Selecting a command from the menu bar.

Only the menu bar provides full access to the capabilities of the CASLide, the key sequences and command toolbar Icons exist to provide shortcuts to the most frequently used commands. Therefore, the sections below describe each CASLide feature as encountered in the menu hierarchy. Where appropriate, the shortcut key sequence or toolbar Icon that also invoke the feature will be mentioned in the command description.

Highlighting a keyword and pressing F1 can display context help for a CASL language keyword.

Clicking in the gutter (left most grey'd column) will select the line and Insert/Overwrite can be toggled by Insert key.

The display supports multiple, syntax colored text editor windows, which in turn can have multiple and split views. The display also shows user interface forms, as they would appear while the application is running.

There is also a project widow, which is shown as a “tree view”, and output view to show the results of the build, and variable values. The project and output views can be “docked” to any side of the IDE window, or detached. Likewise, the tool bars can be positioned allowing the developer to customize the layout of CASLide.

You can double click on an icon in the project tree to open the file or click the right mouse button to display a context menu, which has many helpful functions.

You can double click on a line in the compiler output window to position the cursor to the line that had a syntax error.

A project is a collection of source files, package files, form files, and ICON that makeup the application. The project files, settings, and more are saved as a project thus allowing customization on a project-by-project basis.

CASLide Menus, Toolbars, and Views

The main menu bar of CASL IDE categorizes the commands into eleven major groups:

File	File input output and printing commands.
Edit	Text file editing commands.
View	CASLide commands to change display look and feel.
Image	Commands for editing bitmaps and icons.
Layout	Used to align, space and size controls on forms.
Debug	Execution control while debugging.
Project	Used to change the project settings.
Build	Compile programs and prepares for download.
Execute	Run the CASL program under Windows
Tools	Modify CASLide internal settings
Window	Viewable window manipulation.
Help	Access Help screens.

The File Menu

Most CASLide operations pertaining to the management of source and project files are performed from the “File” menu. The menu contains the file-oriented commands that can be performed by CASLide, as well a list of the most recently opened project and source files. Selecting any file from the list (or using its associated digit key) will cause it to be immediately re-opened for editing.

The file menu commands are:

New	Open a new source file for editing.
Open	Open an existing source file for editing.

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Open Form Source	Open a form file as a read-only source file.
Close	Close the source file being edited.
Save	Save source file in the currently focused window.
Save As	Save the source file with a new name.
Save All	Save all of the source files that are opened.
Recent Project	Displays a list of the most recently opened projects.
New Project	Create a new project.
Open Project	Open an existing project
Close Project	Close the open project
Print	Print source file in the currently focused window.
Print Preview	View source file before printing.
Page Setup	Modify printing options (margins, etc.)
Print Setup	Modify Windows printing environment.
Exit	Terminate CASLide execution.

New (key sequence Ctrl + N)

A dialog is shown to allow selecting the type of file to create. The five choices are:

- CASL source - A text file with the extension CSL
- CASL package - A text file with the extension CPK
- CASL form - A form file with the extension CFF
- CASL ICON - An image file with the extension CIC
- CASL bitmap - A bitmap file with the extension CBM
- C file - A CASLpro C file with the extension C

H file - A CASLpro C header with the extension H

An empty file is then created. The newly opened window becomes active, and all subsequent commands will be applied to the file that it contains.

The file in the newly opened window is automatically assigned the temporary name "CASLide", with the appropriate suffix (CSL, CPK, CFF, CIC, CBM, C or H). Before the file is closed or compiled, it must be assigned a permanent name (see "Save As").

CASL bitmaps are compatible with Windows BMP files as long as they are no larger than 1000 pixels.

Bitmap and Icon file names must be valid CASL variable names. Names must begin with a letter and may continue with any desired combination of letters and numbers. Remember that CASL considers the underscore to be a letter. Names can be any length desired, but only the first 79 characters are significant. Names are not case sensitive thus; ACASLName is, to the compiler, the same as acaslname.

NOTE: Bitmap and Icon file names cannot have the same name as a CASL statement such as file.

NOTE: Do not name your CPK files startup or shutdown because these names are reserved for the compiler.

CASLpro C files will have these include files automatically add when the file is created:

```
#include <CASL_support.h>
```

```
#include <CASL_prototypes.h>
```

Open (key sequence Ctrl + O)

The purpose of this command is to open a new editing window containing an existing CASL source or image file. CASLide first shows a file selector box, which will allow the name of an existing file to be entered or selected from the displayed file list or directories. Once a file name is provided, the new window will be opened and become active, and all subsequent commands will be applied to the file that it contains.

Open Form Source

A form file normally is displayed in its graphical representation. This menu command will open the form file as a read-only text file. Normally this is not needed, but is supplied to allow debugging in case of an unexpected compiler error.

Close

The currently active editing window is closed by this command. If the file within the window has been changed, CASLide displays a dialog box requesting whether or not the associated source file should be saved to disk. If “yes” is selected, the file is saved to disk. If the file does not yet have a permanent name, the “Save As” file selector box (see below) is used to assign the permanent name to the file. This command only appears in the menu if there is an open source file window on the display.

If the file has not been changed, the window is simply closed. The processing of this command is also triggered if the “Close” action is taken on the open editing window.

Save (key sequence Ctrl + S)

The CASL source, form, or image file in the currently active window is saved to disk by this command. If the file does not yet have a permanent name, the “Save As” file selector box (see below) is used to assign the permanent name to the file. This command only appears in the menu if there is an open file window on the display.

Save As

When requested this command will cause CASLide to show a file selector box, which will allow file name to be entered or selected from the displayed file list or directories. This command only appears in the menu if there is an open file window on the display. The “Save As” dialog box also appears if a file window that does not have a permanent name is closed or has the “Save” command applied to it.

Save All

This will save the changes of all the opened files and the project file. This command only appears in the menu if there are one or more open file windows on the display. The “Save As” dialog box also appears if a file window that does not have a permanent name is closed or has the “Save” command applied to it.

Recent Projects

A list of most recent projects are shown as a pick list, allowing the developer faster access to current development projects.

New Project

A new project is defined by selecting this menu item. A file dialog box will be presented, to choose a project name. All source, form, and image files that make up the application are tied to this file. The application is scanned looking for an include file dependencies, and the file names stored in the Include folder in the project tree. The project can be manually rescanned at any time by selecting the Project, Update Includes menu item.

There is an option in Tools->IDE Settings that allows specifying a project name that is different from the application source file name. When this option is not selected, a dialog box is display, when the project is created, that prompts for the source file name after a project name has been assigned.

A CASL source file (CSL) and form file (CFF) are created and added to the project.

Open Project

An existing project can be opened, and its settings restored, using this menu item. A file dialog box of existing projects is displayed, allowing the developer to pick one by selecting one and pressing the Ok button, or by double clicking the desired project. The toolbars, views, opened files, and project settings are restored, thus allowing the application author to resume the project development where they left off.

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Close Project

This will close the project that is currently opened.

Print (key sequence Ctrl + P)

The CASL source file in the currently active window will be output to the printer by this command. This command only appears in the menu if there is an open source file window on the display.

CASLide image and form files can not be printed.

Print Preview

This command allows the printed output to be viewed on the display before being sent to the printer. The preview window allows the viewed text to be zoomed, shown in single or double page mode, stepped forward or backward page by page, and printed. The preview window can be closed with the “Close” button or by pressing the “escape” key. This command only appears in the menu if there is an open source file window on the display.

CASLide image and form files can not be previewed.

Page Setup

The dialog box displayed when this command is requested can change the characteristics of the page produced by the print command. The contents of the header and footer can be modified, as well as the top, bottom, left and right margins.

The following options allow you to define the header and footer contents, and the dimensions of the page margins.

Header

Enter the text you wish to be printed on the top of each page. You may also include the following symbols.

&f File name

&p Page number

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- %a** Abbreviated weekday name
- %A** Full weekday name
- %b** Abbreviated month name
- %B** Full month name
- %c** Date and time representation appropriate for locale
- %d** Day of month as decimal number (01 – 31)
- %H** Hour in 24-hour format (00 – 23)
- %I** Hour in 12-hour format (01 – 12)
- %j** Day of year as decimal number (001 – 366)
- %m** Month as decimal number (01 – 12)
- %M** Minute as decimal number (00 – 59)
- %p** Current locale's A.M./P.M. indicator for 12-hour clock
- %S** Second as decimal number (00 – 59)
- %U** Week of year as decimal number, with Sunday as first day of week (00 – 51)
- %w** Weekday as decimal number (0 – 6; Sunday is 0)
- %W** Week of year as decimal number, with Monday as first day of week (00 – 51)
- %x** Date representation for current locale
- %X** Time representation for current locale
- %y** Year without century, as decimal number (00 – 99)
- %Y** Year with century, as decimal number
- %z, %Z** Time-zone name or abbreviation; no characters if time zone is unknown
- %%** Percent sign

Footer

Enter the text you wish to be printed at the bottom of each page. The same symbols used in the header can also be used in the footer.

File Time

Use the time the file was last modified.

System Time

Use the time when the document was printed.

Margins

This allows setting the amount of white space that surrounds the printed document.

Print Setup

This command triggers CASLide to produce the Windows standard Printer control dialog box, so that the printer itself can be changed, as well as printer control parameters. Parameters such as portrait/landscape paper size and other printer specific parameters can be modified by this dialog.

Exit (key sequence 'x')

CASLide will terminate execution when this command is requested. Each open CASL file that has been changed will trigger the dialog interaction described in the "Close" command above.

The Edit Menu

Each open window containing a CASL source, form, or image file can have the commands from the edit menu applied to it. Different edit options are enabled depending if the active view is for a source, form, or image file.

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The source edit commands allow manipulations on larger blocks of text than can be performed with simple keyboard entry and deletion. Drag and drop text editing is supported. A block of text can be highlighted and moved by placing the cursor on the selected text, holding the left mouse button down, and then dragging the text to its new location. This can even be done between views and external documents.

The source file edit menu is:

Undo	Reverse the last edits made.
Redo	Redo the previously undone edit.
Cut	Move marked text from file to Windows clipboard.
Copy	Copy marked text from file to Windows clipboard.
Paste	Place Windows clipboard contents into the file.
Find	Find matching text strings in file.
Replace	Replace matching text strings in file.
Find in Files	Find all occurrences of string in the project files.
Find Function	Find a function definition that matches the selected text.
Find All Functions	Find all functions and list them in the output window.
List Object Properties	Display a popup with the valid object properties.
Toggle Bookmark	Set and clear a bookmark on the current line
Next Bookmark	Jump to the next bookmark
Previous Bookmark	Jump to the previous bookmark
Clear All Bookmarks	Clear all bookmarks in the active window
Insert Color Value	Popup a color list and insert the select color's RGB value

The image file edit menu is:

Undo	Reverse the last edit made.
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Clear	Clear the image work area.
Restore	Restore the last saved image.
Paste	Place clipboard contents into the selected region.
Copy	Copy selected region to the clipboard.
Find in Files	Find all occurrences of string in the project files.
Find All Functions	Find all functions and list them in the output window.

The form file edit menu is:

Undo	Reverse the last edits made.
Copy	Copy selected display object from file to Windows clipboard.
Paste	Place Windows clipboard contents into the file.
Delete	Delete the selected display object.
Select All	Select all display objects on the form.
Go to Invoker	Position the cursor to an object's invoker function.
Find in Files	Find all occurrences of string in the project files.
Find All Functions	Find all functions and list them in the output window.

Undo - (key sequence Ctrl + Z)

This command allows the last file modification to be reversed. This is useful when a typing error causes the mistaken deletion of text or display object.

Only the last modification can be undone for image files.

Redo - (key sequence Ctrl + Shift + Z)

This command redoes the last undone action. This is useful when you want to reverse and undo. Note that only the last undo operation can be undone.

This command is only available for text files and not available for image or form files.

Cut - (key sequence Ctrl + X)

The highlighted text in the edit window is removed from the window and copied to the Windows clipboard. This command is useful for moving blocks of CASL source code from one file to another. It can also be used as a “delete” operation, to erase the highlighted block of text, although the highlighted block could also be removed by simply hitting the “delete” key. This command is only available in the Edit menu if there is highlighted text in the window.

This command is only available for text files and not available for image or form files.

Copy - (key sequence Ctrl + C)

For source and package files, the highlighted text in the edit window is copied from the to the Windows clipboard by this command. This command is useful for copying blocks of CASL source code from one file to another. Since the standard Windows clipboard is the target of this command, the highlighted CASL source code can be copied into virtually any other Windows application. This command is only available in the Edit menu if there is highlighted text in the window.

For form files, the selected display object, or group of objects is copied to the clipboard. A group of display objects can be selected by clicking and holding the left mouse button and then dragging the selection box to encompass the desired controls. Display objects can be copied between forms, however selector list arrays on copy the array reference and not the contents.

For image files, the selected region is copied to the clipboard. The region is selected using the selection toolbox tool (rectangle with the dotted boarder).

Paste - (key sequence Ctrl + V)

For source and package files, the contents of the Windows clipboard is placed into the file contained in the currently active window, at the current cursor position within the window. This command is also useful for moving blocks of CASL source code from one file to another. Any text that was moved to the Windows clipboard by any Windows application can be moved into the CASL source file by this command. This command is only available in the Edit menu if there is currently data in the Windows clipboard.

For form files, the display objects are copied to the destination with the same position and size as the source objects. New names are assigned to each of the pasted objects regardless if the destination form is the same as the source form, or some other form.

For image files, the contents of the clipboard are copied into the newly selected region. If the destination region is a different size then the source region, a dialog box is presented asking if the pasted image should be resized to fit the new area, or should it be clipped.

Find - (key sequence Ctrl + F)

When requested, this command causes CASLide to display a dialog box that allows the entry of a string to be found in the source file in the currently active window. The search begins at the current cursor position in the window. When found, the matched text is highlighted in the window. The dialog box also provides search options that allow forward and reverse searching through the file, as well as the ability search in a case-sensitive mode. The "Find Next" button in the dialog box move to the next matching string (forward or backwards) in the file.

This command is not available for form or image files.

If Regular Expression is checked, the following characters have special meaning:

\	Marks the next character as a literal and allows using the special characters as text characters. For example, "\" matches the character "\"" where as without the "\" the character "\"" would represent matching the preceding character zero or more times.
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^	Matches the beginning of input. For example, "^Start" would match "Start" only if it started at the beginning of the line.
\$	Matches the end of input. For example, "Start\$" would match "Start" only if it ended the line.
*	Matches the preceding character zero or more times. For example, "zo*" matches either "z" or "zoo".
+	Matches the preceding character one or more times. For example, "zo+" matches "zoo" but not "z".
?	Matches the preceding character zero or one time. For example, "a?ve?" matches the "ve" in "never".
.	Matches any single character except a newline character.
(pattern)	Used to group expressions. For example, "(w s)ay" would match "way" or "say" but "w say" would match any "w" or "say".
x y	Matches either x or y. For example, "z food" matches "z" or "food". "(z f)ood" matches "zoo" or "food".
[xyz]	A character set. Matches any one of the enclosed characters. For example, "[abc]" matches the "a" in "plain".
[^xyz]	A negative character set. Matches any character not enclosed. For example, "[^abc]" matches the "p" in "plain".
[a-z]	A range of characters. Matches any character in the specified range. For example, "[a-z]" matches any lowercase alphabetic character in the range "a" through "z".
[^m-z]	A negative range characters. Matches any character not in the specified range. For example, "[m-z]" matches any character not in the range "m" through "z".

Find in Files (key sequence Ctrl + Shift + F)

This will search for all occurrences of a string in the project CSL and CPK files.

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If you highlight a string then that will be the default search string. The CSL and CPK files are searched and all lines found will be displayed in one of the two new windows on the output bar. The Find in Files 1 window is the default unless the pane 2 checkbox is selected.

You can then double click a line in the output window to position to the file and line.

See **Find** for a description of Regular Expressions.

Find Function (key sequence Shift + F2)

This will find the function definition that matches the function name specified by the currently selected text. This is also available by clicking the right mouse key and picking it from the context menu.

If it finds a function's forward reference first, then just reselect the function name and do the find again. You can reselect the function name by double clicking on the function name text.

The function name text must be selected for this feature to be enabled.

Find All Functions

This will make a list of all of the functions and display the list in the output window. Double clicking a line will position the cursor to the function and open the source file if it was not already open.

Replace - (key sequence Ctrl + H)

The ability to do large-scale text substitutions is provided by this command. The capabilities of the "Find" command are extended with the option of allowing a replacement string to be specified for the matched string. The dialog box displayed by the "Replace" command also contains a button "Replace All" which will perform an unconditional substitution of the matched string with the replacement string throughout the file.

This command is not available for form or image files.

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Restore

This will revert to the last saved image. This menu item is only available for image files.

Clear- (key sequence Del)

Use this menu item to erase the entire image work area. This is only available for image files.

Delete- (key sequence Del)

This menu command will erase the selected display objects. This is only available for form files.

Select All - (key sequence Ctrl + A)

Use this menu item to select all of the display objects on the current form. This is only available for form files.

Go to Invoker

This will position the cursor to the selected control object's invoker function. This menu option is also available on the context menu. Pressing the right mouse button after selecting a control will display the Form Builder context menu.

List Object Properties - (key sequence F2)

This will display a popup of valid CASL object types. You can then select an object type and double click or press the enter key and another popup is display with the object properties for the selected object type. Selecting the property will automatically insert the property name after the cursor.

You can exit either popups by pressing the escape key.

A new checkbox was added under Tools->IDE Settings called "Allow object property detection". If this is checked then the List Object Properties popup will be shown if a period is typed after a valid CASL name.

Toggle Bookmark

Bookmarks can be set for source (CSL and C) and include (CPK and H) files allowing you to bookmark a place in the file being edited and then returning to the bookmark. You can also use the "Mark All" button on the find dialog to set bookmarks on all lines that match the text being searched. Once one or more bookmarks are set you can position to them using the Edit menu, Edit toolbar or Edit context menu bookmark next and previous commands. Bookmarks are local to a single document and the next, previous and clear commands do not span documents.

Next Bookmark

This will jump to the next bookmark in the active window.

Previous Bookmark

This will jump to the previous bookmark in the active window.

Clear All Bookmarks

This will clear all bookmarks in the active window.

Insert Color Value - (key sequence Ctrl + F2)

This will display a color selection popup and will insert the selected color's RGB value at the current cursor position. For example if you were adding the following line:

```
my_button.background = ;
```

You would position the cursor after the equals sign and press Ctrl+F2. Select the color yellow and the line would now look like this:

```
my_button.background = 65535;
```

The View Menu

The display characteristics of CASLide itself can be modified by the commands in the View menu. The various user interface elements (coloring, font, status bar, build view, etc.) can be enabled, disabled, or adjusted by the commands in this menu.

The source file “View” menu commands are:

Status Bar	Toggles the status bar at the bottom of CASLide.
Workbook Mode	Enables / Disables the tabbed view of the edit windows.
Watch Bar	Show / Hides the global and local display.
Project Bar	Show / Hides the tree view of the project.
Build Window	Show / Hides the build window.
Debug Window	Show / Hides the debugger window.

The image file “View” menu commands are:

Status Bar	Toggles the status bar at the bottom of CASLide.
Workbook Mode	Enables / Disables the tabbed view of the edit windows.
Project Bar	Show / Hides the tree view of the project.
Build Window	Show / Hides the build window.
Debug Window	Show / Hides the debugger window.
Options	Allows enabling the grid and changing brush size settings.

The form file “View” menu commands are:

Status Bar	Toggles the status bar at the bottom of CASLide.
Workbook Mode	Enables / Disables the tabbed view of the edit windows.
Project Bar	Show / Hides the tree view of the project.
Build Window	Show / Hides the build window.

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Debug Window Show / Hides the debugger window.

All of the views have these menu commands:

File Toolbar Show / Hides the file toolbar

Execution Toolbar Show / Hides the execution toolbar

Debugger Toolbar Show / Hides the debugger toolbar

Form Layout Toolbar Show / Hides the form layout toolbar

Form Controls Toolbar Show / Hides the form controls toolbar

Image Toolbar Show / Hides the image toolbar

Status Bar

The status message bar typically displayed at the bottom of the CASLide window is enabled or disabled by this command. When the status bar is enabled, the associated text in the “View” menu is checked to indicate so.

The status bar contains several panes that contain information about the state of the current form.

The first pane will contain:

- The current line and column for source files.

- The size and position of the pen for image files.

- The size and position of the selected display object for form files.

The second pane shows the state of the Caps Lock key. It is on if CAP is shown.

The third pane shows the state of the Num Lock key. It is on if NUM is shown.

The fourth pane shows the Insert/Overwrite state. Overwrite mode is on when OVR is shown. This is only used for source files.

The fifth pane displays the current time.

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Workbook Mode

A tabbed folder, where each file has a tab with its name on it, can represent the multiple views of the open files. A file's tab can be clicked to bring that file into focus.

Watch Bar

The watch bar is used to display the global and local variables during debug mode. The watch bar can be hidden and made visible using this menu item. This menu item is only available during debugging.

Project Bar

The project bar shows all of the files associated with a project as a tree view. Any file represented by a folder icon on the tree can be double clicked to open the folder. The project bar can be hidden and made visible using this menu item.

Double clicking on items in the project tree will perform various tasks:

- Source, form, and image files can be added to the project by double clicking the top icon (project icon) on the tree.

- The source file can be opened by double clicking the second icon (source icon) from the top of the project tree.

- A include file (package file) can be opened by double clicking one of the file icons in the Includes folder.

- A form file can be opened by double clicking one of the file icons in the Forms folder.

- An image or bitmap file can be opened by double clicking one of the file icons in the Images folder.

Build Window

The build window is used to display the results of the compile and creation of the final p-code/executable. This window is automatically displayed when a build operation is performed.

Debug Window

The debug window is used to display user selected and function local variables while in debug mode. This window is automatically displayed when the debugger is started.

The ability to show the debug window while not debugging is helpful when one or more variables were defined to be displayed and the variable context is not valid at startup. Since the CASLwin runtime is responsible for fetching the variable value, it will error and quit if it parses an invalid watched variable. The invalid watch variables can be removed before debugging by displaying the debugger window and deleting the variable that is causing the error.

Options

For image files there are two sub-menus:

Grid - This will toggle the pixel grid. When displayed, it allows the designer to see the pixel boundaries.

Brush Size - This allows changing the size of the paintbrush. The paintbrush can be changed from a 2 by 2 pixel to a 5 by 5 pixel brush.

Tool Bars

The view toolbar items show and hide the various CASL tool bars.

File Toolbar

Show / Hides the file toolbar

Execution Toolbar

Show / Hides the execution toolbar

Debugger Toolbar

Show / Hides the debugger toolbar

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Form Layout Toolbar

Show / Hides the form layout toolbar

Form Controls Toolbar

Show / Hides the form controls toolbar

Image Toolbar

Show / Hides the image toolbar

The Image Menu

The **CASL Image Editor** is used to create PRC Icon and button/label bitmap files.

Each CASL project can optionally have an Icon associated with it. If the Icon is not specified (see Project Settings menu), then the default CASL Icon will appear on the PalmPilot desktop.

NOTE: The icon size has changed in CASL42. The previous icon size was 32x22 (see **High Resolution PalmOS Graphics**). The new sizes are:

Screen resolution	desktop icon	list icon
low-res	22x22	15x9
hi-res	44x44	30x18

There can be any number of bitmap files defined in a project. The size of the bitmap file can be changed using the Image menu **Bitmap Properties** dialog. **NOTE:** The bitmap will be cleared if the size is changed.

Pencil Draw one pixel at a time

Brush Draw wider lines

Line Draw a straight line

Hollow Rectangle Draw a rectangle or square with a border

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Solid Rectangle	Draw a filled rectangle
Hollow Ellipse	Draw an ellipse or circle that has a border
Solid Ellipse	Draw a filled ellipse
Fill	Flood fill an area bounded by a shape
Color Dropper	Pick a color from an existing image
Select	Used to mark a region to be copied or pasted
Bitmap Properties	Change the width and height of a bitmap file
New Bitmap Type	Add a new bitmap to a bitmap family
Delete Bitmap Type	Remove a bitmap from a bitmap family
Import Image	Convert a BMP file to a CASL image file

Pencil

The **Pencil** is used to draw one pixel at a time. You can drag the pencil to draw shapes.

Brush

The **Brush** is like the pencil but used to draw wider shapes and or lines. The width of the brush is defined by the **View->Options->Brush Size** menu.

Line

The **Line** selection allows drawing straight lines. After selecting this tool, press the left mouse button at the location where you wish the line to start, and while depressing the button drag to the desired end point.

Hollow Rectangle

The **Hollow Rectangle** is used to draw a rectangle or square that has a border one pixel wide. Click the left mouse button where you wish the top left corner to start and while hold the button, drag to where you wish the bottom right corner.

Solid Rectangle

The **Solid Rectangle** is the same as the **Hollow Rectangle** tool, but will draw a rectangle that is filled.

Hollow Ellipse

The **Hollow Ellipse** will draw an ellipse or circle that has a border one pixel wide. Click the left mouse button where you wish the bounding rectangle to start (the bounding rectangle will not show, but the circle will be contained within it), and while depressing the button, drag to the desired size and shape.

Solid Ellipse

The **Solid Ellipse** is the same as the **Hollow Ellipse**, but is used to draw an ellipse that is filled in.

Fill

The **Fill** is used to flood fill an area bounded by a shape. You can use the left or right mouse button to fill with the color selected for the mouse button.

Color Dropper

Select the **Color Dropper** and then click the left or right mouse button over a bitmap pixel to select the pixel's color.

Select

The **Select** tool is used to mark a region to be copied or pasted into. To copy a section of an image, select this tool a click the left mouse button at the top left corner of the region to be selected. While holding the button down, drag the mouse to the bottom right corner of the area. Release the left mouse button and do the copy menu command (or Ctrl-C). Select the destination region in the same manner, and do the paste menu command (or Ctrl-V). A dialog is presented if the source and destination regions were not the same size. The dialog allows selecting the option to resizing or clips the pasted image to fit the destination region.

Bitmap Properties

This is used to change the width and height of a bitmap file. The valid range is from 1 to 1000 CASL units.

Bitmaps are scaled to fit the destination screen size. If you create a large bitmap and it is scaled down, it will be distorted. You should change the CASL units from the **Project Settings** dialog to match the destination screen size to avoid this.

The width and height can only be changed for bitmap files.

NOTE: The bitmap will be cleared if the size is changed.

New Bitmap Type

A bitmap can consist of a color and monochrome bitmap image. This is called a bitmap family. If you want your application to run on color and monochrome devices then you will need to create a bitmap family consisting of a color image and a monochrome image. The device will decide which to display.

To create a bitmap family first create a color or monochrome image then select **New Bitmap Type** from the Image menu. This will add a color or monochrome image to the existing image that has the same dimensions as the existing image. If you had color it will add monochrome and visa-versa. You can select the color or monochrome family member using the combobox that is on the image toolbar.

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Delete Bitmap Type

If you wish to delete one of the images from a **bitmap family** then select the one you wish to delete in the combobox on the image toolbar and pick **Delete Bitmap Type** from the Image menu.

Import Image

An import function is available on the Image menu. This will allow adding a color or monochrome BMP image to a CASL image file. There can only be one color and one monochrome image in a CASL image file.

A bitmap family can not be read by CASL versions earlier than 3.2 and can not be read by external image editing tools such as Window's Paint utility.

The Project Menu

A project consists of all of the files that are used to create an application. The main source file, include files (packages), image files, and form files are represented on the project tree. From this menu item, files can be added, removed from the project, project variables defined, and the source file rescanned to determine which include files are present.

Add Files	Add a new form or Icon to the project
Add MenuBar	Add or edit a menu bar.
Remove Project Item	Remove the selected form or Icon from the project
Project Settings	Define the form screen size and default font
Project Variables	Define global variables set by the project
Application Settings	Set desktop name, creator ID and more
Application Install Settings	Define the application installer options.
Update Includes	Rescan the include files
Check for Duplicates	Check for duplicate object names

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Compatibility Mode Select version 2.0 compatibility

Add Files

This is where form and image files can be added to the project. Only one image file can be added which contains the Icon shown on the PalmPilot desktop. See the File menu command to read about how to create a new ICON image.

Add MenuBar

The Add MenuBar will display a dialog that is used to add and modify menu bar definitions. Selecting the menu bar in the project tree and then selecting Remove Project Item from the Project menu can delete a menu bar. A menu bar cannot be deleted or renamed if a frame uses it.

Items can be deleted by selecting the item in the menu bar tree and then press the delete key. Dragging and dropping the item to a new location can move items.

The top folders represent the menu bar objects, the next level is the menu top object and the last level is the menu item object.

Selecting a level and pressing the "New" button will create a peer object (i.e. select a menu top and the "New" button will create a new menu top under the same menu bar).

The menu bar is displayed in the project tree and can be opened by double clicking a MenuBar item.

The menu bar definitions are stored in a file that is named the same as the project with the suffix "_menubar.ini" and is in the project directory folder.

Remove Project Item

This will remove the file selected in the project tree from the project. Only image, menu bar and form files can be removed this way.

Project Settings

[Project Settings](#)

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This allows setting the default font used by the Form Builder, CASLwin and CASLppc runtimes. This font will be used for the StdFont, BoldFont, and LargeFont settings. The font style and size are not used. If you wish to change these then you will need to set the font on each display object using its **font modifier** settings.

If the 'Use CASL fonts' checkbox is checked, the CASL font files will be used for StdFont, BoldFont, LargeFont, etc. These fonts match the PalmPilot fonts and include the symbol fonts. The CASL Fonts must be installed in the Windows Fonts directory. The CASL installer does this.

The form height and width sizes for the form design and runtime display can also be configured here. This will set the form size used by the CASLwin and CASLppc runtimes. It has no affect on the PalmPilot runtime.

In prior releases, the CASL units were from 0-999. This can now be changed using CASL Display Size. The allowed range is 100-1000. If you set this to 160x160, then each CASL unit will be one PalmPilot pixel. Likewise one bitmap pixel will be one PalmPilot pixel so this would eliminate any distortion that would have been caused by stretch in the bit map to fit dimensions other than 160x160 (320x320 seems to be ok also). This should also help with making CASLide's form builder match the PalmPilot screen.

Form controls are adjusted when the CASL units are changed. You will need to still need to change your bitmaps and make any code changes if you have position and size information in your code.

The Project Settings dialog now has two color wells for text and background color and a checkbox to use only system colors. These are used as default settings for newly created objects (i.e. not one loaded from an existing form file).

The object property page also has these but for the specific object. This is where you can customize the text and background color of a CASL display object. Leaving the "Use System Colors" checkbox set will make it look like CASL 3.1 and earlier. Please read **Display Object Color** for more details.

The 'Allow 1-bit color control' checkbox will enable black and white coloring for 1-bit color depth PalmOS 3.5 and above devices. Windows OS devices ignore this setting. If this is set, then care must be taken to map colors such that the foreground and background colors do not both become white or black on a 1-bit device. For example, the color blue will show as black and the color green will show as white.

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These settings are stored with the project. If there is no project open then any changes you make to these and the non-project related items (toolbars, CASLide position, etc.) would be save as the defaults. When a new project is created, these defaults will be used. To change the defaults, close the current project, make the changes and then exit the IDE.

Project Variables

Project Variables

Selecting this menu item will display an editable list dialog where numeric and string variables can be defined for the project. The syntax used is the same as used in the source file but without the trailing semi-colon.

```
Numeric Fred = 0  
Count = 10  
Name = "EtheI"  
String MSG = "Warning! Warning! Dr. Smith"  
Flags[5] = $0
```

The variables are compiled into the project as if they were part of the source. These could be used in conjunction with the `COMPILE_IF` directive to use the same source modules in different projects.

Note: You will get "Duplicate variable name" compiler error message if you have project variables with the same name as variables declared in the source.

If you enter a variable with improper syntax, the compiler will display an error message showing line zero has a problem. For example the following compiler error message was produced with the project variable, `MSG = x`:

```
File (null), Line 0: x is unknown function
```

Application Settings

Application Settings

This allows setting the creator ID, desktop name, splash screen and other application settings depending on the build type, PalmOS or PocketPC (not available for Windows builds).

Creator ID

The creator ID is used to associate an application and its databases. Each application must have a unique creator ID. See [Make PRC](#) for more details about how to get a creator ID for your application. The creator id is an alphanumeric string that is from 1 to 4 characters in length.

You will need to install a CASL ActiveSync Provider / HotSync registry entry for the new creator ID. Please read [installing the CASL Conduit](#) for more details.

Separate copies of the creator id are kept for PalmOS and PocketPC builds. If you have more than one PocketPC application that needs to share dbfiles, then set the creator id to the same value for all of the PocketPC applications. You should use the creator id of the application that uses the installer so the files are removed when the application is uninstalled. This was done so CASLrt applications work properly in PocketPC.

Database creator ID checkbox (Palm only)

If the Database creator ID checkbox is checked then the databases created by the application will use the application creator ID and not the CASL creator ID. When the application is deleted from the PalmPilot, the database(s) will also be deleted. This option is only available when doing Palm Professional Edition C Builds.

This setting is always enabled for PocketPC builds and therefore is not shown and is not changeable.

Desktop Name

This is what will be displayed on the device's desktop. Each application must have a unique desktop name.

Splash Screen

The splash screen is a bitmap image that is shown at startup. The splash screen is displayed when the application starts and is removed when the first form is ready for display. This option is only available when doing CASLpro or PocketPC builds.

For PocketPC, the top left pixel color is used to fill in the border area not covered by the bitmap image.

Enable SIP Resize (PocketPC only)

When this is selected the PPC screen view will resize to show the CASL program's full screen view when the user brings up the Soft Input Panel (SIP) keyboard. If you don't select, the SIP will display on top of the lower portion of the CASL program's full screen view. In either case when the SIP is removed from view, the CASL program's screen view will return to full screen view.

PRC Type (Palm only)

The PRC Type can be set to Application or Library. A library functions the same as an application but is not shown on the PDA's desktop. For example, you could have an application that has three executable files and only one should be executed from the desktop. The main file would have PRC type set to Application and the other two would have PRC type set to Library. Library files must also have a unique creator ID. HotSync does not support database created with the library creator ID.

Note: You must delete the library from the PDA before changing its desktop name otherwise it will keep the old name.

PRC Version (Palm only)

The PRC Version edit box allows specifying a version for the application. This can be any text string 15 characters or less. The version string will be copied to the PRC version resource and can be viewed on the PalmPilot Info screen. The "v." is added to the front of the version string by Palm OS. This option is only available when doing Professional Edition C Builds.

Beam Option (Palm only)

The application cannot be beamed if the "Non-beamable application" checkbox is marked. This applies to PRC Types Application and Library. This option is only available when doing Professional Edition C Builds.

Note: The application that does the beaming needs to look at this bit and disable the beaming if set. It is not done automatically by PalmOS unless you use the beaming capability that is built into the PalmOS Desktop.

Application Install Settings

CASLinstall is used to create an install package that will install your PDA application, data files and conduit on your user's machine. It can be access from two CASLide menus: Project and Build menus.

The Project->Application Install Settings menu will open the CASLinstall design dialog and position to the first tab.

The **Build->Build Application Installer** menu will do the same but position to the build tab.

CASLinstall supports only Palm and PocketPC builds, not CASL applications built to run on Windows.

Update Includes

The main application file is scanned looking for include files when the project is created, opened or this menu item selected. Each include file is also scanned looking for other include files. All of the include files found are then placed in the include folder in the project tree.

This command is not available for form or image files.

Check for Duplicates

This will check for duplicate form objects and selector list variable names.

The Build Menu

The act of preparing a CASL program for execution is accomplished by the commands in the Build menu. These commands allow the CASL source file in the currently active project to be compiled to run on the PalmOS, PocketPC or on the Windows. The active configuration combo box on the build toolbar determines the type of build. A subdirectory named the same as the configuration is created under the application directory during the build process. All of the output files for the build configuration is placed in this subdirectory.

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Different menu options are enabled or disabled depending on the build type. For example, if "Windows Release" or "Windows Debug" is selected, then the "Make PRC", "Install PRC", and "Install CSM" menu items are disabled (grayed out). If "Windows Release" is selected, then the debug execute menu item is disabled.

The act of compiling a CASL program will check for syntax errors, and (if there are no errors) translate the CASL source code into CASL p-code. For the PalmPilot, the compiler emits the p-code in a file with the same name as the project file, but with an extension of .CSM. For the PocketPC, the compiler emits the p-code in a file with the same name as the project file, but with an extension of .CCE. When compiling for the Windows environment, the extension is .CSP.

Before actually doing the compile, CASLide checks if the files need to be saved and if so saves the source file to be compiled to the disk. There is a CASLide Settings option under the Tools menu item that enables and disables a prompt that confirms that the files should be saved. If the source file does not yet have a permanent name, CASLide will display a dialog box indicating that it must be given one before it can be compiled.

During the compile process, if errors are encountered they are displayed in a sub-window at the bottom of the main CASL window. Double clicking on an error message in the sub-window will mark and bring into view, the incorrect line in the CASL source file being compiled, so that errors can be found and corrected easily. The contents of the build window can also be copied and pasted to a text document. Selecting the text to be copied accesses the copy/paste options, clicking the right mouse button, and then selecting copy.

After a p-code file has been produced for execution on the PalmPilot, it can be immediately installed for download, or converted to a PalmPilot Program Resource (PRC) file. A CSM p-code file can only be invoked on the PalmPilot from the startup selection list of the CASL runtime interpreter (CASLrt). A PRC file will appear on the PalmPilot desktop so that it can be invoked directly with a single pen tap.

The "Build" menu commands are:

- Compile** Compile based on the active build configuration.
- C Build** Compiler will emit C code
- Build Application Installer** Create the application install package.

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Make PRC	Construct PRC file from CASL p-code file.
Install PRC	Install PRC files into PalmPilot download directory.
Install CSM	Install p-code files into PalmPilot download directory.
PocketPC Install	Copy the CCE file to the PocketPC install directory.

Compile - (key sequence F7)

This command invokes the CASL compiler to translate the source file in the currently opened project to p-code to be executed on the PocketPC, Windows or PalmOS depending on the build configuration. The build configuration is selected using the combo box on the build toolbar.

The p-code generated for the Windows PC will be named with a “CSP” suffix.

The p-code generated for the PalmPilot will be named with a “CSM” suffix. Any errors will be displayed in the compiler’s error log sub-window.

If the p-code application compiles with no errors the total size of the p-code will be reported in the error log sub-window along with the maximum size that the application can be. If the application goes over the limit, you can continue to increase the size of the application by breaking it up into two separate applications that call each other using the CASL launch command.

C Build

This will enable / disable the compiler from emitting C code. The C code is then compiled when the PRC file is made. A ‘C’ instead of a ‘CSM’ file is produced in the build directory.

NOTE: You must have a **CASL Professional Edition** license file for this option to be enabled.

Build Application Installer

CASLinstall is used to create an install package that will install your PDA application, data files and conduit on your user's machine. It can be access from two CASLide menus: Project and Build menus.

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The Build->Build Application Installer menu will do the same but position to the build tab.

The **Project->Application Install Settings** menu will open the CASLinstall design dialog and position to the first tab.

Make PRC

In order to create a PRC file from a CSM p-code file, the PalmPilot desktop name and the unique creator ID for the application must be entered into the dialog box displayed by CASLide. The dialog allows the creator ID to be entered as a one to four character long alpha numeric string. The desktop name and creator ID and other **Application Settings** are saved with the project and restored whenever the project is opened.

NOTE: creator ids should be registered with the Palm creator ID registry (see <http://dev.palmos.com/creatorid/>).

After this information is entered, CASLide will produce a file with a suffix of PRC and a name the same as the CASL source file. The PRC file is ready for installation into the PalmPilot.

Before the PRC is made, the dates of the source files and CSM file are checked to see if a build must be done. There is a CASLide Settings option under the Tools menu item that enables and disables a prompt that confirms that the files should be rebuilt.

If the C Build option was selected, then this will launch the C_Build.bat file that is used to compile the application and produce a PRC file. Please refer to the **CASL Professional** section for more information.

This menu item is only enabled when the build configuration is "Pilot Release" or "Pilot Debug".

Install PRC

This command will install a created PRC file into the appropriate directory for download into the PalmPilot. After this command is invoked, the PRC file will be downloaded into the PalmPilot on the next HotSync operation.

Before the PRC is installed, the dates of the source files, form files, CSM file, ICON file and PRC file are checked to see if a build must be done. There is a CASLide Settings option under the Tools menu item that enables and disables a prompt that confirms that the files should be rebuilt.

This menu item is only enabled when the build configuration is "Pilot Release" or "Pilot Debug".

Install CSM

This command will install a created CSM p-code file into the appropriate directory for download into the PalmPilot. After this command is invoked, the file will be downloaded into the PalmPilot on the next HotSync operation. This file will only appear in the selection list display by the CASL runtime interpreter when it is initially started.

Before the CSM is installed, the dates of the source files, form files, and CSM file are checked to see if a build must be done. There is a CASLide Settings option under the Tools menu item that enables and disables a prompt that confirms that the files should be rebuilt.

This menu item is only enabled when the build configuration is "Pilot Release" or "Pilot Debug".

PocketPC Install

This will copy the CCE file produced by the PocketPC build, to the PocketPC install directory. The install directory is defined in the **IDE Settings** and should point to the directory that ActiveSync uses to copy files to the device. The folder must be enabled by ActiveSync using the Microsoft ActiveSync options menu. Select the Sync Options tab and check the Files checkbox.

The Execute Menu

This menu contains the command start the Windows version of the CASL runtime interpreter to execute a CSM file that has been produced by the "Windows Debug" and "Windows Release" builds. The Windows interpreter displays a window with the same aspect ratio as the Palm Pilot. This allows CASL programs to be run on both the PC and PalmPilot with no changes. Use the standard Windows close action to shutdown the runtime interpreter.

The "Execute" menu commands are:

Run Execute the release or debug build without debugging.

Debug Execute the debug build and enable debugging.

Breakpoint Toggle a breakpoint setting on a source line.

Remove All Removes all breakpoints.

Run - (key sequence Ctrl + F5)

This will execute the Windows Release or Windows Debug builds. The debug information is ignored if the debug build is executed.

This menu item is only enabled when the build configuration is "Windows Release" or "Windows Debug".

Debug - (key sequence F5)

This will execute the Windows release or debug build. If the debug build is executed, then the debugger is enabled allowing stepping through the application's execution. The release build is executed as though the Run menu item was selected, since there is no debug information in the output file.

While debugging, a yellow arrow is displayed on the line that is to be executed next.

This menu item is only enabled when the build configuration is "Windows Debug".

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Breakpoint - (key sequence F9)

This will toggle the breakpoint setting on the line containing the cursor. A red circle is displayed to the left of the line if a breakpoint is enabled for that line. Breakpoints can be set on non-executable lines such as comment, function statements, and variable blocks. The breakpoint is ignored, and in the future will not be allowed (CASLide does not have knowledge to parse the source code at this time).

The breakpoints are stored with the project and restored when the project is re-opened.

This is not available for image files.

Remove All Breakpoints - (key sequence Ctrl+F9)

This will remove all of the breakpoints in all of the files that are set.

This is not available for image files.

The Debug Menu

The “Debug” menu contains commands that are used to control the debug execution of the application. The menu items are disabled when the application is executing statements (i.e. it is not stopped at a breakpoint). A red circle marks lines that have breakpoints set and yellow arrow marks the line that is to be executed next.

The “Debug” menu commands are:

Step	Execute the current line.
Step Over	Execute over a call.
Run To Cursor	Sets a temporary breakpoint at the cursor and resumes.
Resume	Resumes execution to the next breakpoint.
Quit Debugger	Quits debugger and exits the CASL application.
Display Variable	Allows watching a variable's value.
Add Variable	Adds a variable to the watch window.

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Breakpoint	Set or Clears a breakpoint.
Remove All	Removes all breakpoints.
Show Next	Show the line that is to be executed.

Step - (key sequence F11)

The marked statement is executed and control returns to the debugger on the next statement. The next statement to be executed is marked with a yellow arrow to the left of the line.

Step Over - (key sequence F10)

This is the same as Step unless the statement is a call. If it is a call, then execution resumes until the statement that follows the call, or the next breakpoint, whichever is encountered first.

If the statement is an IF or ELSE_IF and contains a function call, then the program will not break if the condition is false. You will need to put a breakpoint in the block that will execute if the condition is false.

Run To Cursor - (key sequence Ctrl + F10)

A temporary breakpoint is set on the line marked by the cursor. Execution is then resumed until the temporary breakpoint, or normal breakpoint, which ever is encountered first.

Resume - (key sequence F5)

Execution is resumed until a breakpoint is encountered. If an event function (e.g. button-evoked function) is exited before a breakpoint is found, the application has control until a new event is triggered. The debugger menu items and toolbar items will be grayed until a breakpoint is encountered, and control returns to the debugger.

Quit Debugger - (key sequence Shift + F5)

Terminates the application and exits the debugger.

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Display Variable - (key sequence Shift + F9)

This will display a dialog box that allows looking at or changing the highlighted variable's value. The variable can also be added to or removed from the watch window. There are three watch windows, so they can be grouped in a logical manner. The refresh button will fetch the variable's value again. Changing the variable name and clicking refresh can reference a new variable. The Display Variable dialog can also be invoked by double clicking the variable in the watch window.

The variable value will also be displayed if the **debugger data popup** feature is enabled and the cursor is over the name.

Add Variable - (key sequence Alt + F9)

This is similar to the **Display Variable** menu item, but adds the variable without going through the display dialog box. Highlight the variable and select the Add Variable menu item or right click to display the context menu and then select Add Variable.

You can also select a variable in the watch window and then right click and select Delete Variable from the context menu. You can select one or more variables by using the shift and control keys as you would for doing multiple selections on other Windows applications.

The selected variables are stored with the project and restored when the project is re-opened.

Breakpoint - (key sequence F9)

This will toggle the breakpoint setting on the line containing the cursor. A red circle is displayed to the left of the line if a breakpoint is enabled for that line.

The debugger stops at statements that are executed. If you single step in the debugger through a simple IF.. ELSE... END_IF, you'll see that the ELSE isn't executed and the debugger skips over it.

The ELSE_IF is essentially two statements together: an ELSE followed by an IF. The debugger is treating this as an ELSE when the IF portion evaluates to FALSE, and skipping past it to the next ELSE or ELSE_IF. If the next ELSE_IF is also evaluating to FALSE, the debugger is skipping past that as well.

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Breakpoints on multi-line statements must be set on the line that contains the semicolon.

Breakpoints can be set on non-executable lines such as comment, function statements, and variable blocks. The breakpoint will be ignored, and in the future will not be allowed (CASLide does not have knowledge to parse the source code at this time).

The breakpoints are stored with the project and restored when the project is re-opened.

Remove All Breakpoints - (key sequence Ctrl + F9)

This will remove all of the breakpoints in all of the files that are set.

Show Next – (key sequence Alt + Num + *)

This will position the debug cursor to the next statement that will be executed.

The Layout Menu

The “Layout” menu contains commands used to size and align selected display objects on a form. For some only one object need to be selected, and for others two or more objects need to be selected.

The “Layout” menu commands are:

Align	Align two or more controls.
Space Evenly	Space three or more controls and equal distance apart.
Make Same Size	Make two or more controls the same size.
Center	Center one or more controls on the form.
Size To Content	Size the control based on its display text.
Grid	Enable the layout grid.
Lock Control	Will lock a control so it can not be moved or sized.

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Unlock Control Will unlock a control so it can be moved or sized.

Align

This will align the left, top, right, or bottom sides of two or more selected controls. The controls are aligned with the dominant control, which is shown with a hatched border.

Left

This will align the left side of all the selected controls to the dominant control, which is shown with a hatched border.

Right

This will align the right side of all the selected controls to the dominant control, which is shown with a hatched border.

Top

This will align the top of all the selected controls to the dominant control, which is shown with a hatched border.

Bottom

This will align the bottom of all the selected controls to the dominant control, which is shown with a hatched border.

Space Evenly

This will space three or more controls evenly apart, horizontally or vertically. The controls between the top and bottom (vertically) or left and right (horizontally) and spaced so there is equal space between all of the selected controls.

Across

Space them evenly from left to right on the form.

Down

Space them evenly from top to bottom on the form.

Make Same Size

This will size two or more controls to the same width, height, or both. The controls are sized to the dominant control, which is shown with a hatched border.

Height

Set the height of all the controls to the same height of the dominant control, that is shown with a hatched border.

Width

Set the width of all the controls to the same width of the dominant control, that is shown with a hatched border.

Both

Set the height and width of all the controls to the same height and width of the dominant control, that is shown with a hatched border.

Center

This will center one or more controls on the vertical or horizontal axis.

Vertically

Center all of the selected controls between the top and bottom of the form.

Horizontally

Center all of the selected controls between the left and right sides of the form.

Size to Content

This will size one or more selected controls based on the display text. If the control has a bitmap, then the control is sized to fit the bitmap.

Selectors, Files Selectors, and Frames are not affected by this command.

Grid

An alignment grid can be shown to help position the controls on the form.

A horizontal line is also shown near the top of the form. This represents the bottom of the title displayed on the PalmPilot form.

These settings are saved with the project.

Toggle Grid

This will turn on and off the alignment grid.

Snap to Grid

If this is checked, then the control will move to the closest grid point.

Grid Spacing

This allows setting the grid spacing.

Lock Control

This will lock a control so it can not be moved or sized.

Select one or more controls and then select lock, or press the right mouse button to display the context menu. There is also a checkbox on the property sheet that sets the Lock State of the control.

Unlock Control

This will unlock a control so it can be moved or sized.

Select one or more controls and then select unlock, or press the right mouse button to display the context menu. There is also a checkbox on the property sheet that sets the Lock State of the control.

The Tools Menu

The “Tools” menu contains commands that are capable of changing CASLide environment variables.

The “Tools” menu commands are:

- IDE Settings** Change the CASLide settings.
- Customize** Customize the user extensible tool menu.
- Convert CDI to PDB** Convert a CASL CDI/CDB file to a PDA PDB.

IDE Settings

IDE Settings

This allows changing the CASLide settings.

PalmPilot Install Directory

The PalmPilot HotSync directory location can be modified. The new directory location string is entered into the *PalmPilot* edit box or the browse button to the right of it can be used to locate the directory. This should be the PalmPilot HotSync directory for the user (e.g. c:\pilot\jsmith).

PocketPC Install Directory

This is similar to the PalmOS install directory, but is used for PocketPC installs. This should point to the directory that ActiveSync uses to copy files between the desktop and PocketPC device.

The default directory is in the desktop “My Documents” folder and is named using the PocketPC device ID. The device ID can be found by going to the PocketPC Start->Settings->About->Device ID tab. The directory will be named “<device id> My Documents”. Most of the time this will be “PocketPC My Documents” if the default device name was not changed.

Font Settings and Editor options

The font settings for the project tree, build window, variable watch window, and the editor can be individually customized from this menu item.

The editor options can be changed using the dialog box that is displayed when this menu item is selected. Syntax coloring options can be modified and tab settings adjusted by this dialog box.

IDE Form Size

The *IDE Form Size* settings allow changing the form size used while laying out the form design.

Restore last workspace

The *Restore last workspace* box will enable reloading the last project when CASLide is started the next time.

Assume project name same as source name

The *Assume project name same as source name* will allow naming the project separately from the application source name. When this option is selected, a dialog box will be displayed when a project is created that allows naming the project.

Confirm automatic save before build

The *Confirm automatic save before build* checkbox will cause a message box to be displayed if CASLide is automatically saving the source files. CASLide attempts the automatic save before a compile, run, or PRC generation or install, if it sees that the input and output files are out of date.

Confirm automatic build before run

The *Confirm automatic build before run* checkbox will cause a message box to be displayed if CASLide is automatically building the project. CASLide attempts the automatic build before a run, or PRC generation or install, if it sees that the input and output files are out of date.

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Add new form file to project

The *Add new form file to project* checkbox will add a newly created form file to the project file set.

Automatically check for duplicates

The *Automatically check for duplicates* checkbox will check for duplicate object names, and duplicate selector list variable allocation. Duplicates can also be checked by selecting “Check for duplicates” in the Project menu.

Allow Multiple CASLide's to run

The *Allow Multiple CASLide's to run* checkbox will allow or disallow multiple copies of CASLide to run. If it is not checked then an attempt to start a second copy will bring the first CASLide to the foreground.

Allow object property detection

The *Allow object property detection* checkbox if checked will automatically display the Object Property popup. Please refer to [List Object Properties](#) for more detail.

Show C build window

If this is not checked then when you do a PRC build you will no longer see the compile in the DOS window. When the compile is finished you will see the output in the build output window just like a CSL build. If you double click on an error line it will take you to the file and line where the error occurred.

See [Project C Files](#) for more information.

Show Debugger Data Popups

If this is checked then the value of the variable under the cursor will be displayed after a brief delay. This is only enabled when debugging an application.

Customize

Customize

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User defined tools can be specified here. The user tools are added to the bottom of the Tools menu. The menu text, executable name, argument list, and working directory are specified for each tool defined. Several CASLide variables can be used when specifying the arguments and working directory. The project name and path are the same as the output file.

\$(ProjectPath) yields the directory location of the project.

\$(SourcePath) yields the directory location of the CSL file.

\$(ProjectName) is substituted with the name of the project.

\$(SourceName) is substituted with the name of the CSL file without the CSL extension.

\$(BuildPath) will give the directory location of the build output files.

For example, if \$(ProjectName).CSL is given in the arguments edit box, and the project name is Roster, then Roster.CSL will be passed to the user tool that is evoked.

NOTE: The variable names ProjectPath, SourcePath, etc. are case sensitive.

Convert CDI to PDB

You can convert CASL CDI and CDB databases to a PDA PDB file.

The CDI/CDB to PDB conversion dialog will use the CASL creator ID when the Project->Application Settings Database creator ID checkbox is not set, otherwise it will use the application creator ID. The creator ID is displayed and can be changed before the conversion is made.

The record id and status fields in the CDI/CDB are ignored and are set to zero in the created PDB file.

The function can also be performed using the ConvertCDI2PDB.exe utility. The command syntax is:

```
ConvertCDI2PDB <filename> -CreatorID <id> -DisableBeam -Backup
```

Where <filename> is the name of the CDI or CDB and <id> is your creator id. You must use quotes around the file name if it has spaces in it. If you do not specify the creator ID then the CASL creator ID is assumed.

The database will have the beam disable bit set if the `-DisableBeam` option is set.

NOTE: The application that does the beaming needs to look at this bit and disable the beaming if set. It is not done automatically by PalmOS.

The database will have the backup bit set if the `-Backup` option is set. The PDB file will be copied to the HotSync user's backup folder each time a HotSync is performed.

NOTE: This should only be set for PDB files that do not have a HotSync conduit.

This example will convert `Test1.cdi` to `test1.pdb` and assign `Tst1` as the creator ID and set the backup bit:

```
ConvertCDI2PDB "G:\Program Files\Temp\Test1.cdi" -CreatorID Tst1 -Backup
```

This example will convert `Test2.cdb` to `test2.pdb` and assign `CASL` as the creator ID and will disable beaming:

```
ConvertCDI2PDB "G:\Program Files\Temp\Test2.cdb" -DisableBeam
```

The Windows Menu

This menu provides the standard controls for switching between the currently active window on the display, creating a new window, splitting views, and tiling the currently open windows.

The Help Menu

The CASLide help sub-system is invoked with the commands from this menu. The help database can be searched for a particular topic string, or be traversed by category. The "About" command provides licensing information for the currently executing version of CASLide. The help sub-system can also be accessed via the "F1" key.

Image Editing

The CASL image editor is used to create PRC Icon and button/label bitmap files.

Each CASL PalmOS project can have an icon associated with it. If the Icon is not specified (see Project Settings menu), then the default CASL Icon will appear on the PalmPilot desktop.

There can be any number of bitmap files defined in a project. The size of the bitmap file can be changed using the Image menu **Bitmap Properties** dialog. NOTE: The bitmap will be cleared if the size is changed.

The image editor can be launched from the project tree by double clicking the image file in the Images folder. The image file will be automatically opened in this case.

If a very small bitmap is created (10x10) and stretched to fit a large form builder window (1024x768), the bitmap will distort.

When creating a new monochrome image or modifying an existing one, the left mouse button is used to draw a black pixel, and the right mouse button is used to draw a white pixel.

When creating a new color image or modifying an existing one, the left mouse button and right button have a selected color used to draw the pixel. The color is selected from the color toolbar that is shown when a color image is being edited. Position the cursor over the desired color and click either the left or right mouse button.

The color RGB=0,128,128 is a transparent color which will be replaced by the background color of the object it is placed on. You can select the transparent color by clicking the blue green box that is under and on the right of the **Other** button.

Selected colors are changed to match the closest color in the PDA's color palette. For example a color value of hex 0x91a24f will change to hex 0x999966.

The menu **Image->Bitmap Properties** allows setting the mode to monochrome or color.

NOTE: The bitmap will be erased if you change the size or color mode properties.

A bitmap can consist of a color and monochrome bitmap image. This is called a bitmap family. If you want your application to run on color and monochrome devices then you will need to create a bitmap family consisting of a color image and a monochrome image. The device will decide which to display. The menu **Image->New Bitmap Type** and **Image->Delete Bitmap Type** are used to create bitmap families.

The combobox on the Image Toolbar can be used to select the bitmap family image to be displayed.

- **NOTE:** Bitmap families take more space than a single bitmap. Also once you create a bitmap family you will not be able to open the bitmap with earlier CASL releases or external image edition tools such as Window's Paint utility.

See the **Image Menu** for a list of available drawing tools.

Form Builder

The output of the forms builder is a CASL code file with the extension CFF (CASL Form File). The output file is automatically included before and after the CSL source file. The objects are defined before the CSL is compiled, and assigned modifiers after the CSL is compiled.

Adding A Form

Adding A Display Object

Selecting A Display Object

Display Object Properties

Display Object Color

NOTE: Please do not edit the form file with a text editor. The form builder expects a very particular format.

Adding A Form

Add a form to the project by selecting Project->Add Files... from the menu, and then selecting a form file (CFF). If the file does not exist, it is created.

If the Tools->IDE Settings...->Add new form file to project is set, then the form will be added when the form file is saved, if it is not already in the project.

Adding A Display Object

Select a tool from the display object toolbar and then click the left mouse button at the desired location on the form. While holding the left button down, drag the display object to the desired shape.

An existing display object can be selected, copied and then pasted to the same form or a different form.

Delete all selected objects with the Del key.

The display objects are:

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- Button
- Checkbox
- Drop_down
- File Selector
- Frame
- Grid
- Label
- Selector
- Text Field

NOTE: If more than one form exists in a project, then they all should have a frame, otherwise the display objects without a frame may not display predictably. The frame is automatically created when a form is created using the form builder.

Selecting A Display Object

Click the display object or press the left mouse button and while holding it drag the selection rectangle over all of the objects being selected.

Select multiple objects by clicking with the control key pressed. The last object selected is the dominant control (has a wider border). When aligning controls, all selected controls align with the dominant control.

Holding the shift key while selecting an arrayed display object will select all of the members of the array. If you wish to keep previously selected objects then also hold the control key down.

Form objects can be moved using the cursor keys. The Home, End, PgUp and PgDn are used to move diagonally. If the grid and snap are enabled then it will move one grid space unit, otherwise it will move one CASL Display unit for each key press.

Display Object Properties

Each display object has a set of properties, position, size, name, etc. Double click a control to get its property sheet. If a frame is present, then clicking on the surface (and not on a control) will display the frame's property sheet.

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If the object is an array of objects, then the properties for all of the members will be the same except for the position and color of each member.

The property sheets are:

Common Properties

Button Properties

Checkbox Properties

Drop_down Properties

FileSel Properties

Grid Properties

Label Properties

Selector Properties

Text Properties

Common Properties

Each display object has a common set of properties. These are on the first tab of the object's property sheet.

Array Size

If this is greater than zero then the object is an array of objects. The index text box to the right will show the index number of the selected object (minus one is not an array). If the number is increased, then new objects are added to the end of the array and initially will have the same position as the object that was changed. If the array size is decreased, then objects are removed from the end of the array.

Background Color

This will display a color selection popup that is used to select the object's background color.

See [Display Object Color](#) for more information.

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Font

This defines the font used for the text displayed by the object. One of the standard PDA fonts can be selected or a special font can be selected using the “Font...” button.

Note: Special fonts only apply to applications running using CASLwin.

Hidden

The object will initially be hidden if this is checked.

Locked

Checking this will prevent the object from being moved or sized on the design form.

Name

This is the name of the object and the name used when referencing the object in the source code. The name must be unique in the project (except for an array of the same object).

Names can consist of the letters A-Z, a-z, number 0-9 and the underscore ‘_’. Names can not start with a number.

Text Color

This will display a color selection popup that is used to select the object's foreground color.

See [Display Object Color](#) for more information.

Use System Colors

If this is checked then the object will use the system's color settings for the text and background. The Text and Background colorwells are disabled when this is set.

See [Display Object Color](#) for more information.

Width and Height

These two properties show the size of the object. The object size can be changed by selecting and dragging its border or these values can be changed in the property sheet.

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X Position and Y Position

These two properties show the position of the object. The object position can be changed by selecting it and dragging it to a new location or these values can be changed in the property sheet.

Button Properties

These are the properties for a button object in addition to the **common properties**.

Display

This will be the text shown on the object. If this is left blank, then the text shown will be the **Name** property.

If the **Expression** check box is set, then a CASL expression can be used and the result of the expression will be shown on the object.

For example, `char(61) + ">"` will display `=>` on the object if the expression check box is checked. If it was not checked, then the literal `char(61) + ">"` would be displayed.

Global and local variables cannot be used because they have not been declared (i.e. nothing has been compiled at design time).

NOTE: If the expression check box is set and a string is entered, then you must enclose the string entered in the display text box in quotes. For example, "Click Me" would display Click Me, without the quotes, CASLide will display an error.

Expression

If the Expression check box is set, then a CASL expression can be used and the result of the expression will be shown as the **display property** for the object.

Bitmap

This will display a dropdown of all the images in the project for a button or label object. If a button or label is an array, then any elements that have the bitmap name empty will use the bitmap of the first element of the object array.

Invokes

This property defines the function that is invoked when the object triggers an event.

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When you click on the browse button the invoker function is searched and if found, the source file is displayed and positioned to the invoker function. If the invoker function is not found, then an error is displayed. This function is also accessible by the Edit menu item **Go to Invoker**.

Border

This is used to change the border style.

Button Map

This will display a dropdown of the available hardware buttons that can be associated with a non-arrayed button object. If the associated hardware button is pressed, then the button object's invoker function will be executed.

The hardware button is active even if the form containing the bound button object is not shown.

Format

Numeric data is converted to a string before it is stored in the display property. The format modifier is used to convert the numeric to a string and is the same format string that is used by the string() function when converting a numeric to a string.

Checkbox Properties

These are the properties for a checkbox object in addition to the **common properties**.

Display

Please refer to the button **Display** property description.

Expression

Please refer to the button **Expression** property description.

Format

Please refer to the button **Format** property description.

Version 4.3

Invokes

Please refer to the button **Invokes** property description.

Drop_down Properties

These are the properties for a drop_down object in addition to the **common properties**.

Display

Please refer to the button **Display** property description.

Expression

Please refer to the button **Expression** property description.

Format

Please refer to the button **Format** property description.

Invokes

Please refer to the button **Invokes** property description.

List

The contents can be defined in the forms builder instead of the CSL code. The Selector's string array is generated if the list size is greater than zero. If the list size is zero, then just the reference is put in and the array will have to be allocated in another selector or in the source code module (CSL file). This way one selector can define the list and another can also use it, but not define it. Click on the browse button (button with dots) in the List edit box on the property page to invoke the dialog that lets you define the list array contents.

NOTE: Do not put a reverse slash before the closing quote of the string ("This is bad\"). The compiler will treat it as an embedded quote and the string will not be terminating with a closing quote.

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List Height

This controls the height of the drop_down selection list and is in CASL display units. If it is too small then nothing will be shown. On the PDA you must set this to show at least two or more lines.

No Input

This is used to set the field to read only when checked.

FileSel Properties

These are the properties for a file selector object in addition to the **common properties**.

Display

Please refer to the button **Display** property description.

Expression

Please refer to the button **Expression** property description.

Invokes

Please refer to the button **Invokes** property description.

Grid Properties

These are the properties for a grid object in addition to the **common properties**.

Change column sizes by selecting the grid and then move the cursor over a column division. Press the left mouse button and drag it left or right.

Display a Grid's cell properties by double clicking the cell in the grid. Only a few properties can be changed when the row is not zero. Use row zero to change the base properties. Base properties have the same value for all rows.

A tab on the Grid property sheet represents each column. The last tab is used to add new columns.

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The Grid property page has a column placement section that is used to move and delete columns.

Column widths are expressed as a percentage of the overall grid width. If more than 100% of the grid width is used, then columns starting from the right will be adjusted when exiting the Grid properties. Likewise the last column is expanded if less than 100% is used.

Column division lines are shown when the display-positioning grid is turned on.

Bitmaps are centered in the cell.

Labels are centered vertically in the cell.

If single line mode is enabled then the text object will be centered vertically in the cell.

The bound field sets the source of data for the column. It is the string or numeric array name or it could be the database object dot field. For example:

```
dbfile myfile;  
field x1;  
end;
```

You would use myfile.x1 in the bound field.

Row Loaded Invoker

This property defines the function that is invoked when a grid row is loaded. The `invokersub` built-in variable contains the display row number.

When you click on the browse button the invoker function is searched and if found, the source file is displayed and positioned to the invoker function. If the invoker function is not found, then an error is displayed.

Row Unloaded Invoker

This property defines the function that is invoked when a grid row is unloaded. The `invokersub` built-in variable contains the display row number.

When you click on the browse button the invoker function is searched and if found, the source file is displayed and positioned to the invoker function. If the invoker function is not found, then an error is displayed.

Selected Row Invoker

This property defines the function that is invoked when a grid row is selected. The `invokersub` built-in variable contains the display row number.

When you click on the browse button the invoker function is searched and if found, the source file is displayed and positioned to the invoker function. If the invoker function is not found, then an error is displayed.

Display Rows

The number of display rows are controlled by this property.

Data Rows

This sets the initial number of data rows. If a bound data source contains a greater number of rows, then the number of data rows will be changed at runtime to match the largest bound data source.

Scrollbar

This enables or disables the grid scroll bar.

Border

A grid can have the following border styles:

None: No border or grid lines.

Outline: A border around the grid.

Column: Column grid lines and a border.

Row: Row grid lines and a border.

Both: Column and row grid lines and a border.

Select Enabled

If this is checked then the grid selection is disabled initially.

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Column Placement

This is used to move and delete grid columns.

Select a column name from the “Delete column” dropdown to delete a column.

Select a name from the “Move column” dropdown to set the column being moved. Then select “Before” or “After” and then select the destination column in the next dropdown. The column being moved will be moved “Before” or “After” the selected destination column.

Columns Definitions

The grid column properties are the same properties used by the **button**, **label**, **checkbox**, **text** and **drop_down** objects.

Label Properties

These are the properties for a label object in addition to the **common properties**.

Bitmap

Please refer to the button **Bitmap** property description.

Display

Please refer to the button **Display** property description.

Expression

Please refer to the button **Expression** property description.

Format

Please refer to the button **Format** property description.

Selector Properties

These are the properties for a selector object in addition to the **common properties**.

Version 4.3

Invokes

Please refer to the button **Invokes** property description.

List

Please refer to the drop_down **List** property description.

Text Properties

These are the properties for a text object in addition to the **common properties**.

Display

Please refer to the button **Display** property description.

Expression

Please refer to the button **Expression** property description.

Format

Please refer to the button **Format** property description.

Invokes

Please refer to the button **Invokes** property description.

No Input

This is used to set the field to read only when checked.

Single Line

This will enable horizontal scrolling if the text is wider than the object. Horizontal scrolling is always enabled on PalmOS devices.

This will also vertically center the text object if it is in a grid cell.

Scrollbar

This will enable the scrollbar on text objects when set to Top or Bottom.

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There are three types of scrollbar settings:

None: No scrollbar

Top: The cursor will be positioned at beginning of the text as text is added.

Bottom: The cursor will be positioned at the end of the text as text is added.

Display Object Color

The Project Settings dialog now has two color wells for **text color** and **background color** and a **Use System Colors** checkbox. These are used as default settings for newly created objects (i.e. not one loaded from an existing form file).

The **object property page** also has these, but for the specific object. The object property page is where you can customize the text and background color of a CASL display object. Leaving the Use System Colors checkbox set will make it look like CASL 3.1 and earlier.

Checkboxes and label objects do not have a background color setting and will use the frame's background color.

Each element of an array object can have different colors, but the "Use system color" setting can only be changed on the base object (i.e. element 0).

A foreground and background object property has been added to allow changing the object color at runtime. The color is expressed as a RGB value (red green blue). Each color range is from 0 to 255 where 0 is no color. A RGB color value is $\text{red} + 256 * \text{green} + 65536 * \text{blue}$. Palm OS only supports web safe colors (about 225 colors) and CASL will change the set color to match the closest Palm color.

There are two new functions for color. The first is a `rgb(red, green, blue)` function that will return the color value given a red, green and blue value from 0 to 255 where 0 is no color. The second new function is called `color_depth()` and will return the number of bits used to display colors. A return value of 1 indicates monochrome, 4 is 16 colors and 8 is 256 colors.

PalmOS 3.5 and above monochrome devices allow black and white coloring. For example you could change a button to have white text and a black background. Setting the 'Allow 1-bit color control' checkbox on the **Project Settings** dialog enables this.

NOTE: A show or setting the hidden property to 0 must be done after changing an objects color, size, bitmap or position. This is left to the application in case there is more than one property being changed on a single object. This helps reduce the processing overhead of automatically doing each object as each object property changes when only one show is needed after all the properties are set.

NOTE: The background color is set to the frame's background color when the no_input property set to 1.

Installing the CASL Conduit

If you are going to distribute a CASL application that uses databases, then you will need to install the CASL Conduit on your end users machine.

You need to run the CASL conduit registration utility CondReg.exe with the path to the CASL conduit DLL CASLcn20.dll specified on the command line. For example, if the CASL conduit DLL were in E:\CASL, then you would use:

```
CondReg.exe "E:\CASL"
```

NOTE: There is no trailing backslash. If the path name contains spaces, then it will need to be enclosed in quotes.

This will copy the DLL from the specified location to the PalmPilot install directory, and register the CASL conduit with HotSync. The PalmPilot HotSync software must be installed first.

NOTE: HotSync Manager must be restarted after installing the CASL conduit.

If the **database creator ID** is set the same as the application creator ID, then a CASL HotSync registry entry must be created for the application. The following CONDREG command line options are available to do this. If you do not specify any one of the new arguments, then CASL will be used for the one(s) not set.

NOTE: Do not use the same directory for applications with different creator Ids.

-AppName "name"

Name is a quoted string that is displayed during HotSync.

-CreatorID id

Id is the application creator ID.

-Directory "dir"

Dir is a quoted string that is the directory that is under the user's HotSync directory and is where the databases are read from and written to during the HotSync operation.

For example:

```
CONDREG "C:\CASL" -AppName "Fred's App" -CreatorID FRED -Directory "Fred Dir"
```

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This will copy the CASLcn20.dll from C:\CASL and create a HotSync registry entry that is called ApplicationFRED. The creator ID is set to FRED and the databases will be written to the directory called Fred Dir, which will be under the user's HotSync directory. HotSync will display Fred's App when it HotSyncs the databases.

The utility REMCOND is used to remove a CASL HotSync conduit registry entry. There are three optional command line arguments:

-CreatorID id

Id is the application creator ID. If you do not specify -Creator ID, then the CASL entry will be removed.

-KeepDLL

If this is specified, the CASL conduit DLL will not be deleted.

-Silent

Using this will remove the prompt that asks if you are sure you want to remove the conduit and will remove the prompt that indicates the conduit has been removed. Error prompts will still be shown.

Here is an example:

```
REMCND -CreatorID FRED -KeepDLL
```

This will remove the HotSync registry entry called ApplicationFRED and will not delete the CASL conduit CASLcn20.dll. If you do not specify any of the new arguments, then CASL will be used as the creator ID and the CASL conduit will be deleted.

Installing DLL's

The following DLL's must be in the Windows System32 directory or in the directory, which CondReg or CASLwin is executed from. You should never overwrite a new DLL with an old DLL. It is best to use a Windows installer such as InstallShield when installing DLL's since it will check the version code (msvcrt.dll 6.0.8797.0 should not replace 6.1.9359.0). Checking the date can be misleading. If you do not want to check the version then you must put the DLL's in the same directory as the application. This way the application has what it needs and other applications do not end up using an older DLL.

```
MFC42.DLL  
MSVCRT.DLL  
MSVCRT.DLL
```

Files That Can Be Redistributed

Licensee may distribute the runtime, and conduit files with their CASL applications on a royalty free basis. The file set is:

CASLwin.exe	CASL Windows (95, 98, 2000, NT, XP) runtime
CASLrt.prc	CASL PalmOS runtime
CASLppc.exe	CASL PocketPC runtime
CASLCn20.dll	CASL Conduit
CondReg.exe	CASL Conduit HotSync registration
RemCond.exe	CASL Conduit HotSync unregistration
ConvertCDI2PDB.exe	CASL PalmOS database conversion utility
CASLcdi2ppc.exe	CASL PocketPC database conversion utility
CASLcopy.exe	CASL install utility
Setup.exe	CASL install runtime
CASL*.fnt	CASL Fonts

Installing CASLwin

CASLwin requires the following DLL's to execute. Please read [Installing DLL's and Files That Can Be Redistributed](#) for further information.

MFC42.DLL
MSVCRT.DLL
MSVCRT.DLL

The CASL fonts will need to be copied to the Windows/WinNT Fonts directory if the Use CASL fonts option was set in the [Project Settings](#).

The screen size is derived from the CSP file and the size was set using the Project menu item called [Project Settings](#). This can be overridden using the ScreenSize option.

The screen size can be changed in the [Project Settings](#) and will be set in the CSP file. This setting can be overridden using the -ScreenSize option.

The size of the CASLwin runtime can be changed using the -ScreenSize option. If zero is used, then the runtime will size the screen the way it did before the 2.5 release (i.e. works the same as the 2.53 and earlier released versions). If the -ScreenSize option is not specified, then the screen size in the CSP file will be used (suggested method).

The -ScreenSize option has two arguments, height and width. For example:

-ScreenSize 160 0 Form will be 160 wide and 160 tall

-ScreenSize 200 190 Form will be 200 wide and 190 tall

Note: The -ScreenSize option follows the CSP filename.

```
CASLwin "C:\Project Files\CASL\Fred.csp" -ScreenSize 320 320
```

The CASLwin option -EscapeEnabled can be set TRUE to allow the application to shutdown if the escape key is pressed. By default the escape key is disabled, however this option is set TRUE when CASLwin is launched from CASLide.

A shortcut can be configured to launch a CASL application. For the shortcut target, specify the full path to CASLwin in quotes, followed by the full pathname to the CASL application in quotes. If desired, you can optionally add the `-ScreenSize` option. Set the full pathname of the directory of the CASL application, in the 'Start in' edit box.

Here is an example of a shortcut's settings:

Target: "C:\MyDir\CasIWin.exe" "C:\MyDir\MyApp.csp" -ScreenSize 320 320

Start in: "C:\MyDir"

Run: Normal Window

Installing CASLppc

There is a new folder under the CASL install folder called “PocketPC Files”. This folder contains the CASL PocketPC runtimes for ARM, SH3 and MIPS CPUs. To install the runtime, connect your PocketPC PDA via ActiveSync and then double click on the “PocketPC Files\install.bat” file. This will install CASLppc.exe into the \Program Files\CASLsoft folder on the PDA and add a shortcut to the Windows\Start menu\Programs folder. From the Settings>Menu dialog you can add the CASL runtime to the Start menu.

These are the steps to install your application on the PDA:

- Enable the Files sync option from the ActiveSync Sync Options tab and set the path to the same path that you define in CASLide Tools>IDE Settings>PocketPC install directory.
- Make sure the build is set for “PocketPC Release” or “PocketPC Debug”.
- Compile your application.
- Select PocketPC Install from the Build menu. ActiveSync will detect that the file was written and will copy it to the PDA under you My Documents folder.

Your application can be started by selecting CASLppc from the Start menu or by clicking the dot CCE file that was installed.

CASLinstall can also be used for installing CASL PocketPC applications.

CASL Databases

The CASL database file format is a variation of the comma-delimited format used by other Window applications. CASLwin uses this format when reading and writing the database. The CASL conduit also uses this format when transferring the database to the hand held device.

The PocketPC version of CASL uses the Palm creator ID for its DBFILES and FileSel objects. The creator ID and Desktop name is set using the CASLide menu Project>Application Settings.

The CASL dbfiles are in the PocketPC Object Store database and will be synced (to/from/merge) when the ActiveSync module is completed. The files will be in CDB/CDI format on the PC and in Object Store format on the PDA.

The PocketPC database is not a CDB file on the device. The CASL dbfile is in the object store. When the ActiveSync CASL desktop and device providers are completed, the desktop CDB/CDI will be transferred to/from/merged the device.

There is a CASL utility called CASLcdi2ppc which can be used to transfer a CASL CDI or CDB file from the Windows PC to the PocketPC device.

CDB Format Format definition of CASL database files

CDI Files A form of a CDB used to create a database on a hand held

CDB Format

If you open a CDB file with a standard text editor, you will see a number of lines at the top that starts with a pound sign '#'. These are header records and describe the file version, number of records, and the record structure. The remaining records are data records.

The lines beginning with the pound sign are the file header lines.

#CDBID: CASL Identifies the file as being a CASL file. This is not the application creator id and must always be set to CASL.

#MAJREV: 2 Major revision (must always be set to 2).

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#MINREV: 0 Minor revision (must always be set to 0).
 #FLDCNT: 1 Number of fields per record (1 field in this example).
 #RECCNT: 1 Number of records (1 record in this example).
 #SYNCMODE: MERGE HotSync mode (set to merge in this example).

The allowed values for #SYNCMODE are:

MERGE Typical transfer.
 PC_TO_PDA PC overwrites the PDA
 PDA_TO_PC PDA overwrites the PC
 NO_SYNC No transfer is performed
 NOT_SPECIFIED External control (same as MERGE for now)

The field definition format is #FLDNUM:N TYPE:T SIZE:S, where N, T and S are defined as:

N Field number starting with 1 and ending with the field count specified by #FLDCNT
 T S-string, N-number, NA-Number array, BA-Byte array
 S Number of elements if array, else it is zero

Data Records

There will be #RECCNT data records that follow the header records. The first field is the record ID field and is assigned by the PDA. You should not assume anything about the value of this field. When new records are added on the PC side, it is set to zero, 0x00000000. The next field is the status field. This can be a combination of the following values:

0x0001 Used during HotSync.
 0x0002 Record has been marked for deletion.

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0x0004 The record has been modified.

0x0008 This is a new record.

NOTE: The record ID and status fields must be set to 0x00000000, 0x0000 for CDI files.

The fields that follow the status field contain the applications data. String fields have double quotes surrounding them. If a double quote is part of the string, then it has double quotes around it. If a field is empty, then it still needs a comma as a placeholder. Here are some examples:

0x00D1C004,0x0000,"David",,0,"", "" The field after David is empty.

0x00000000,0x0008,"Ethel",,0,"Hi ""Mike""", "" Mike is quoted.

0x00D1C005,0x0000,"Fred",100,0,"one, two", "" String "one, two" has embedded comma.

Numeric fields must also have quotes around them if a comma is used as the separator between the integer and fractional part of the number. The quotes are optional if the period is used as the separator. CASL will reformat the number when reading so that it matches the regional setting of the machine. In other words it does not matter if you have "123.456" or "123,456", CASL will make the adjustments when converting the text format to the binary format.

CASL will use the regional settings when writing the database file to convert the binary format to the text format. For example if your regional settings are set to the US, then the number will be output with the period as 123.456 (without the quotes to maintain compatibility with earlier databases). If your regional settings are France then the text version of the number will be stored with the comma as "123,456" and will have quotes surrounding it.

When the CASL conduit reads a data file from the PDA it does the following conversions:

Another single quote is added to a single quote if ODBC

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Another double quote is added to a double quote if not ODBC

Carriage returns are stripped if not ODBC

Linefeeds are converted to \n if not ODBC

When the CASL conduit sends a data file to the PDA it does the following conversions:

Two double quotes are converted to a single double quote

\n is converted to carriage return linefeed

We reserve the right to change the format of the CDB file at any time. If we do, then the major revision will change if there is a massive structure change that is not handled automatically. If there is a slight change then the minor revision will change and the database subsystem will take care of the conversion.

CASL Database Install (CDI)

Normally CASL databases are only transferred by the CASL conduit if they exist on the hand held device. A CASL application is run on the hand held to create the CASL database for the first time. If you do not want to create the database on the hand held first, then a CASL Database Install file (CDI) must be used to create a CASL database from the PC.

The CASL database filename must end in CDI (CASL Database Install) and must be placed in your user's hand held CASL database directory, where the CDB files are normally located.

NOTE: The name is upper and lower case sensitive. The CDI file name must match the case of the file name used to open the database file on the hand held device.

The CASL database install file is just a CASL database file with the CDB file extension changed to CDI.

NOTE: The record number and status flag fields must be set to zero. Please refer to the **CDB data record structure** for more information.

The conduit first does a normal transfer. It then looks for files with an extension of CDI. For each one, it does the following:

1. Strips off the CDI extension.
2. Deletes the database on the hand held by that name.
3. Creates a new database on the hand held by that name.
4. Copies the file from the PC to the hand held.
5. Deletes the CDB file from the PC.
6. Deletes the BAK file from the PC.
7. Renames the CDI to CDB.
8. The BAK file will be created on the next transfer.

A new CDI header line has been added for ODBC support. It must follow the SYNC_PREF line and its format is:

```
#DSN: <data source name>
```

Where <data source name> is a valid ODBC data source name. The name must not be longer than 31 characters and may contain spaces. The database created on the PDA will use ODBC when it is processed by the CASL conduit during future HotSync's.

Once a dbfile has been created on the PDA, it will always retain if it was ODBC enabled. You can not change this unless you delete the dbfile and recreate. The dbfile data_source_name property string can change however. You can define a new ODBC data source name prior to opening the file.

ODBC Support

First, make sure you create an ODBC Data Source Name (DSN) using the ODBC Data Source Administrator in the Control Panel folder. There are problems with Access ODBC if the database is create via the Create... Button while you are defining the Access ODBC DSN. CASL can not open the database nor can Access. Create the database using Access and not via the ODBC setup.

The field names are not carried in the object code so they are automatically constructed. They are called FLD_n_t where n is the field number and t is the type: S for string and N for numeric.

The first two fields are for the record ID (long int) and status (short int) and must exist.

You can create the tables ahead of time and give them better column names if you would like. Just make sure that the number of fields and the types match your code. Also, remember to have the REC_ID and REC_STATUS fields first.

You can add keys and indexes to the tables but just make sure the first index is on the first field and is ascending.

The file selector object does not know about DSN's.

The delete command does not know about DSN's.

The Excel and Text ODBC drivers do not allow updates. You can only create once but can read always.

The conduit is not creating the backup ODBC database so a slow sync will not work. A slow sync is done when you sync a PDA on two computers. The first computer will do a normal sync and the second computer will do a slow sync.

ODBC does not know about Palm users. If each user has the same DSN then they will all write to the same database. You can set the dbfile's data_source_name property any time before opening the file.

The data_source_name dbfile object modifier must be set when the dbfile object is defined if you are going to change the name.

CASLcdi2ppc Database Transfer Utility

CASLcdi2ppc will transfer a CDI/CDB dbfile from the desktop to the PocketPC device.

Command line option	Description
-CreatorId XXXX	Where XXXX is your creator id
-DbFile DbFilePath	Where DbFileName is the name of the file to transfer. You may specify multiple –DbFile options to transfer a select group of files. The path name can use wildcard characters to specify a group of files. NOTE: The name must be in quotes if it contains spaces.

If no command line options are specified, then a dialog box is presented.

Example Usage:

```
caslcdi2ppc -CreatorID MyApp -DBFile c:\myapps\coolapp\theDBFile.cdb
```

CASLppc2cdb Database Transfer Utility

This will transfer CASL DbFiles from the PocketPC device to the desktop PC. The file created on the PC is a CASL CDB file.

Command line option	Description
-CreatorId XXXX	Where XXXX is your creator id
-TransferAll	This will transfer all DbFiles match the given creator ID
-DbFile DbFileName	Where DbFileName is the name of the file to transfer. You may specify multiple –DbFile options to transfer a select group of files. NOTE: This is not used if TransferAll set.
-DestinationFolder	The folder where the CDB files is created. NOTE: The name must be in quotes if it contains spaces and must not have a trailing backslash.

If no command line options are specified, then a dialog box is presented.

*Example Usage:

```
caslppc2cdb -creatorid MyApp -DbFile MyDB -DestinationFolder c:\myapps\coolapp
```

***Note** - There should not be a trailing "\" at the end of the destination folder name.

Note: The #SYNCMODE is currently always set to "NOT_SPECIFIED"

CASL Professional Edition (C generator)

The C_Build directory contains the support files necessary to upgrade the CASL environment to the new Professional Edition, which provides the ability to translate CASL projects into C source code, and compile and link that source code (with a CASL support library) into a standalone PRC file.

The compile / link process is seamlessly integrated into the CASLide. A new "Build" menu option (**C Build**) toggles the CASL environment between creating p-code based Pilot executables or C-code based executables. When the "C Build" option is set, the CASL compiler will generate C code, and the "Make PRC" option will invoke a batch file that will perform the C compile and link process, using the GNU GCC compiler.

C Build applications can have a user-specified creator ID by checking the Database creator ID checkbox on the **Project->Application Settings** dialog. A CASL conduit can be configured for the new creator ID using the **CASL conduit tool**.

If you are going to write external C functions then please read C_Guild.txt which is in the CASL43\C_Build folder

CASLpro Installation Info

The CASL compiler will generate C code compatible with the latest CASLpro support library, allowing CASLpro programs to now run on PalmOS 5.0 devices.

Once the CASLpro compiler and the PalmOS 5.0 SDK have been installed, the CASLpro environment can be used to create applications that will run under PalmOS 5.0.

The CASLpro 4.0 version requires the use of PalmOS SDK 5.0, which can be downloaded and installed from our GCC install page <http://www.caslsoft.com/gccinstall.htm>. See step 4.

NOTE: In CASLpro 4.1, the support library 'pda_' functions no longer start with an underscore, as they did in CASLpro 3.3. For example, '_pda_any_dispose' is now called 'pda_any_dispose'. For many of these, we've created #define 'aliases' in CASL_support.h, like this:

```
#define _pda_any_dispose pda_any_dispose
```

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So external C functions that we're used with CASLpro 3.3 wouldn't get syntax errors when compiling with CASLpro 4.1.

If you had an external C function that called a CASLpro support library function using an underscore, and with CASLpro 4.1 are getting a GCC compiler syntax error, you can add you own alias to CASL_support.h (in the C-build directory) to get around the problem. Then send us an email to let us know you did it, and will add your alias to CASL_support.h in the next release.

Additional information can be found on our web site:

Gcc install <http://www.caslsoft.com/gccinstall.htm>

CASLpro FAQ <http://www.caslsoft.com/caslprofaq.htm>

Project C Files

C files can be added a CASLpro project by either creating them via File->New or by Project->Add Files. You will see two new folders, C Files and Header Files. Header files are included by scanning the C files just as CPKs are done. You can have multiple C files in a CASL project. The sample PixelWidth in the CASLpro Samples directory has been updated to use project C files.

You no longer need use CASL_optional.c and CASL_optional.h in your project.

Create a new C file from CASLide's File->New menu and move the code from CASL_optional.c to the new C file. If you had other C files being included from CASL_optional.c then just add those files to the project using the Project->Add Files menu and remove the include directives from your code.

If you wish to keep using CASL_optional.c and want to add it to the project then you must include the following statements at the top of CASL_optional.c:

```
#include <CASL_support.h>
```

```
#include <CASL_prototypes.h>
```

When a new C file is created these includes are added. If you use another editor to create the C file then you must add the above include directives to the top of the file.

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If CASL_optional.c included other C files and you wish these to be part of the project tree then you must remove these C includes directives and then add the C files to the project.

You can build an existing CASLpro project without using the C file feature by not doing anything (i.e. don't add any C files to the project), but at some point you should move to the new c_build method.

When you do a PRC build you will no longer see the compile in the DOS window. When the compile is finished you will see the output in the build output window just like a CSL build. If you double click on an error line it will take you to the file and line where the error occurred.

NOTE: Do not name your C files the same name as your CSL file since the compile produces a C file by the same name. Also do not name then startup or shutdown since these are reserved for the compiler.

NOTE: The pause in the c_build.bat file has been removed (among other changes). If you use the old c_build.bat file then CASLide will appear to hang when doing the gcc phase.

NOTE: Windows Me does not support changing the environment space from Config.sys at startup. Windows Me users must first setup the MS-DOS environment space for c_build.bat. Double click on the c_build.bat file that is in the CASLsoft\CASL33\C_build directory then:

1. Right click the title bar of the MS-DOS window and select properties.
2. Click the Memory tab.
3. In the Initial Environment box, set the initial environment size to 4096.
4. Click OK.
5. Close the MS-DOS window.

The CASLide **Show C build window** checkbox in the Tools->IDE Settings must also be checked for Windows Me users.

Please read CASL33\C_Build\C_Guide.txt file for more details on how interface C functions to CASL functions.

CASLinstall

CASLinstall is used to create an install package that will install your PDA application, data files and conduit on your user's machine. It can be access from two CASLide menus: Project and Build menus. The **Project->Application Install Settings** menu will open the CASLinstall design dialog and position to the first tab. The **Build->Build Application Installer** menu will do the same but position to the build tab.

The function of each tab:

Application Information: This is where your application name, company name and version are set. This information will be displayed on the CASLinstall dialog when the install script is executed. It will be displayed as:

Installing <Application name> <Version> <Company name>

Setup Dialogs: Dialogs can be defined that show during the install process.

Welcome Bitmap File: This is a Windows BMP file and should be sized 460 by 280 pixels. Depending on the target machine's system font settings, this can really range from 460x280 to 615x350. If it is too big then it will be clipped evenly around the edges. If it is too small then the background will be filled in with the bitmap's top left corner pixel color.

Software License File: This is a text file that contains your software license agreement. The user has two options, proceed with the install if they choose "I Agree" or to cancel the install. The text is word wrapped in the display and can be a maximum of 65000 characters.

Setup Prolog File: This is a text file that is shown before the user selects a PDA user and starts the install process. The text is word wrapped in the display and can be a maximum of 65000 characters.

Setup Epilog File: This is a text file that is shown after the install process finishes. The text is word wrapped in the display and can be a maximum of 65000 characters.

Show Progress Indicator: If this is checked then a progress bar is shown. Because an install is usually small, the copy will happen very quickly and the progress indicator may not be needed.

File Groups: The application and data files to be installed are configured here. You select one or more files from the Windows file explorer and drag and drop them into the files group tree. To delete an item, select it and press the delete key. The windows file explore can be launched from the "Locate files then drag-n-drop" button.

Device files are files that are transferred by the Palm built-in conduit. These have the extensions PRC and PDB.

CASL data files are files that are transferred by the CASL conduit and have the extensions CDB and CDI. The CASL data files will only be transferred if a CASL application is present on the PDA. This means it will take two syncs to get the files transferred. The first will transfer the application and the second will transfer the CASL data files.

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A folder called Desktop Files has been added to the File Groups tab in the Application Installer feature. You can put any group of files in the folder. These files will be copied to the MyApp_PalmOS_Install (and PocketPC) folder but will not be installed on the PDA.

Synchronization: The CASL conduit for PalmOS and PocketPC can optionally be installed if the "Install the conduit" checkbox is marked. If it is installed then the user installing the application will be shown a dialog box that indicates the synchronization manager will be reset so that the new conduit is made ready.

The application creator ID is set to the applications ID if the application data files are set to use its ID, otherwise the ID is set to CASL. The Project->Application Settings->Database creator ID checkbox is used to set this.

The name shown during synchronization is defined here and so is the directory name that is used to create the application directory under the user's synchronization directory. These are set to CASL if the application is not using its own creator ID for the data files.

Build: After making changes to the install or if you rebuilt your application, the "Build Install" button is used to create a CASLinstall package. The files are placed in a directory under your project directory and are named <project name>_install. You would give all of the files in this directory to your user and instruct them to execute Setup.exe.

NOTE: All of the files in the <project name>_install directory are deleted before the build is performed.

Pressing the "Test Install" button can test the install. The CASLinstall is executed and the files are installed.

Features specific to PocketPC installs

The CASL application installer has been updated to support PocketPC installs. The build configuration (i.e. Pilot Release, PocketPC Release, etc.) is used to determine the install type. The install files are put into a folder, which has the project name, followed by the build type and then "_Install". For example, a project named PutFrame would have a folder called "PutFrame_PocketPC_Install" that contained the PocketPC install files.

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When the application is installed on the device it is stored in a folder under the \Program Files folder and is named using the name specified in the Application Name field on the Application Information tab. A shortcut is added to the Programs start menu folder and is named using the desktop name specified by the Project->Application Settings dialog (used to be called Application Settings). If a desktop name is not specified, then the Application Name field on the Application Information tab will be used.

There is a new field on the Application Information tab, which allows specifying an application icon. If the field is blank, then the standard CASL icon will be used. The icon must contain a 32x32 and 16x16 bit icon and use no more than 256 colors. You will need to reset your PocketPC device if you change icons since PocketPC caches the old icon image.

Icon editors can be found on the web. Here are a couple of links:

<http://www.webattack.com/Freeware/gmm/fwicontools.shtml>

<http://home.kabelfoon.nl/~meijer/software/icoedit.html>

<http://www.webattack.com/download/dlsnicoedit.shtml>

The directory used by CASL ActiveSync is specified when the application is installed. This can be set when setup.exe is run by using the –SyncDataPath option:

```
Setup.exe –SyncDataPath "C:\MyApp\SyncData"
```

The application data folder edit box will not be displayed on the install application dialog.

A check box labeled Create CAB Files has been added to Build tab which allows generating the cab files when the application setup files are produced. If this box is not checked, then after the install package is built, you will need to double click the buildcab.bat file in the install folder to create the PocketPC CAB files. Double click buildcab_cleanup.bat to remove the temporary files.

The buildcab process combines the CASLppc runtime, application file CCE's, and application dll's and produces a CAB file for each CPU type. The CeAppMgr.exe installer uses these CAB files to install your application on the target device.

The install includes a copy of CASLppc, which it renames to the application name. There is a copy in the ARM, MIPS and SH3 folders.

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NOTE: The following files must be in your CASL 4.1 folder for buildcab to work:

Makecab.exe

cabwiz.ddf

Cabwiz.exe

These are included with the [PocketPC emulator](http://www.sundialsoft.freemove.co.uk/pocketpc-emulator/) and also can be found at <http://www.sundialsoft.freemove.co.uk/cabwiz.zip>.

These are the files that are used by buildcab.bat to produce the CAB and DAT files used by CeAppMgr.exe to install your application:

ARM folder	Contains the renamed CASL runtime and needed CASL DLL's and application DLL's for the ARM CPU.
MIPS folder	Contains the renamed CASL runtime and needed CASL DLL's and application DLL's for the MIPS CPU.
SH3 folder	Contains the renamed CASL runtime and needed CASL DLL's and application DLL's for the SH3 CPU.
SetupDll.dat	Used by the CASL setup DLL when installing and uninstalling the application.
<Your app>.inf	Used by cabwiz to create the CAB and DAT files used by CeAppMgr.exe to install the application.
*.CCE	Application program files.
*.WAV	Wave files used by the application.

Buildcab.bat deletes the files that are no longer needed after the CAB files are created. The remaining files are used to install your application. These are:

*.CDB and *.CDI	Initial application database files.
*.CAB and *.DAT	Application files installed by CeAppMgr.exe.

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<Your app>.ini	Used by CeAppMgr.exe to install CAB files.
InstallScript.ini	Used by CASL Setup.exe.
*.TXT	Text messages displayed at install time.
Setup.exe	CASL installer.

The application database files are removed when the application is uninstalled.

Automating CASLide Builds

Builds can now be done from the CASLide command line or batch file. The command line options are:

- -Project “path name for the project CPJ”
- -Build “build type” where build type is PalmOS Release, PocketPC Release, etc.
- -Log “path name for log file”
- -Variable “strvar=”a string\”” or –Variable “numvar=123”
- -BuildInstaller

The –Project option is followed by the path to the project CPJ file. The path must be in quotes.

The –Build option is followed by a string that specifies what target platform to build. The valid options are:

- PalmOS Release
- PalmOS Debug
- PocketPC Release
- PocketPC Debug
- Windows Release
- Windows Debug

The –Log option is followed by the path name for the log file. The string *****Build Error***** will be in the log if the build failed and the CASLide exit code will be –1 (normally it is 0).

The `-Variable` option allows changing a Project Variable from the command line. The parameter that follows the `-Variable` option is the Project variable and its value. This must be in quotes. If the variable value is a string, then the value must also be in quotes using the `\` to represent the quote. You can repeat the Variable option as many times as needed to pass in different variables. The Variable option will only substitute values for Project Variables (i.e. variables defined using the CASLide menu `Project>Project Variables...`) that already exist in the project.

The following `-Variable` option sets the string project variable `strval` to “a string”:

```
-Variable "strvar=\"a string\""
```

The following `-Variable` option sets the numeric project variable to 123:

```
-Variable "numvar=123"
```

The `-BuildInstaller` option will build the application installer. This option is only valid for PalmOS and PocketPC build types. The application installer must have been previously created using the CASLide menu `Project->Application Install Settings...`

An example of how to automate the CASLide build process can be found on WAGWARE Systems CASL Development page
http://www.wagware.com/casl_devl.htm.

High Resolution PalmOS Graphics

The runtime form size can be specified for PalmOS and Windows. The Runtime Form Size is set using the Project->Applications Settings dialog. Separate settings are maintained for each platform type.

The IDE Form Size is set using the Tools->IDE Settings dialog. This sets the form size for designing forms and is independent of the platform type.

If you plan on writing your application for hires, double the size of the bitmaps and change the CASL display size to 320x320. For example if you had a 50x50 bitmap, make it 100x100 to get more detail. You may also have to go through the application code and edit the values for x_pos, y_pos, height, and width of controls and draw command coordinates where they are changed at runtime.

Set the runtime form size to 320x320 (hires) and build the project.

On a hires PDA you will get the hires graphics and on lowres you should see what you would see if you did not use hires.

You could also take advantage of the larger screen area for more display objects in hires, but in lowres the objects will be crowded.

Here is a method to prepared a basic image for hires:

1. Open an existing CASL bitmap, switch to the Black and White version if you're not already on it.
2. Press Ctrl+A to select it, and Ctrl+C to copy the bitmap.
3. Open Windows Paint, press Ctrl+V to paste it in.
4. Save it, because your B/W version in CASL will be lost soon.
5. Return to CASL bitmap, switch to the Color version of your bitmap.
6. Press Ctrl+A to select it, and Ctrl+C to copy the bitmap.
7. Switch to Windows Paint, pressed Ctrl+V to paste it in.
8. Select Image>Stretch/Skew and stretch horizontal and vertical to 200%.

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9. Use the Paint editor to touch up the bitmap as needed. You can take out a lot of jagged edges. Remember, going from 160 x 160 resolution to 320 x 320 does not double your number of pixels, it quadruples it. You go from 25,600 pixels to 102,400. So you can really improve things.
10. When your image looks nice, press Ctrl+A, Ctrl+C to copy the image.
11. Return to CASLide, select Image>Bitmap properties... and double the size of your color bitmap. This is where your old bitmap (color and bw) disappears.
12. Press Ctrl+V to paste the new bitmap in.
13. Return to Paint and open the B/W version you saved.
14. Repeat steps 8-10(+12) for the B/W version then save it in CASL.
15. Repeat all this for each bitmap in your project.

Support for large and small icons has been added for PalmOS. When you create an icon you will be prompted for a small or large icon.

screen	desktop icon	list icon
low-res	22x22	15x9
hi-res	44x44	30x18

NOTE: The previous PalmOS project icon is not compatible with CASL 4.3 and will have to be recreated to fit the new size.

Palm has changed icon sizes so your old icons will have to be removed from your project and recreated. You'll need to open CASL43, open your current icon there, copy it to the clipboard and move back to Window Paint to save it (and save the B/W version of your icon too). You have to save it because the old icon has to be removed from your project when you open the project in CASL42. The old icon won't open in CASL42 since it's the wrong dimensions. So remove it, then add a new icon for your project, and select to make it a desktop icon.

Your large hi-res icon (CASL calls it a desktop icon) will be 44x44. They're square now rather than rectangular like in low res.

You old icon was 32 x 22, so your height is going to double but you'll have to cut the width back from 32 to 22, so when you double the bitmap size it will fit in 44 x 44. Takes some playing with, depending on your current icon's width, to make a new one resized to the right dimensions.

Your new small, list-sized icon will be 30 x 18. Palm has given a different shape here so you can't just reduce the large icon by 50%.

Once you have your small icon created in Paint, copy it, add a List icon to your project in CASLide and paste the small icon in. (repeat for B/W small icon).

NOTE: You will need the newer Palm OS5 SDK, which can be downloaded from:

<http://www.caslsoft.com/download/palmos-sdk-5.0r3-1.tar.gz>

If you do not use it you will get a "MemGluePtrNew not found" error during the PRC creation process.

PocketPC ActiveSync for CASL

Before using CASL ActiveSync, the application database must first be opened and closed using the new CASL PocketPC runtime for the database to be upgraded to 4.3.

The CASLcdi2ppc and CASLppc2cdb utilities are no longer used.

CASL ActiveSync only supports sync modes merge and none. However CDI files are still used to create an initial database on the PDA.

Introduction

CASL Active Sync is used to synchronize CASL database files on Pocket PC (PPC) (running Microsoft Windows CE) handheld PDA's with .CDB/.CDI files on your Microsoft Windows PC.

When you place your PPC into its docking cradle the Windows Active Sync Manager recognizes it initiates the transfer of new, edited or deleted records from either the PPC and/or windows. You will need to have installed version 3.7.1 or later of Microsoft ActiveSync.

When you install your CASL application onto your PPC you are also asked to define a directory on your PC where that application (by creatorID) where the PC side .CDB/.CDI files will reside.

Behaviors of ActiveSync:

- The PPC application cannot have the database open when the PC is trying to update the database. You will get a message indicating that there are unresolved items.
- When you update a database on the PPC, then ActiveSync detects that the database has changed and will automatically synchronize the database if the desktop schedule (Options->Schedule) is not set to "manually". The PC will not see the change if the file is open during the synchronization.
- You cannot synchronize databases between PalmOS and PocketPC because the record id's are produced using different methods.

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- Deleting the database files on the PC will not delete the database on the PPC. The database will be recreated if you perform a sync and then disconnect and reconnect.
- CASLsync will ONLY synchronize a single PPC to a single PC!

Installation

A new synchronization tab has been added to the PocketPC installer dialog. For your application, enter the name that you wish to be shown in the ActiveSync options screen. The “Install the conduit” checkbox must be checked for CASL ActiveSync to be installed with the application.

Setup.exe allows overriding the sync data path when the `-SyncDataPath` option is specified: `Setup.exe -SyncDataPath "C:\MyApp\SyncData"`. The application data folder edit box will not be displayed on the install application dialog.

After the application is installed, an entry for the application will be displayed in the ActiveSync options screen. Enable CASL ActiveSync by checking the application icon in the ActiveSync options screen. Each application will have its own CASLsync icon.

CDI files that are included in the install configuration and will be transferred to the PDA when the sync is performed (similar to PalmOS HotSync).

If an application is uninstalled from the PPC then its CASL ActiveSync configuration should also be removed. Open ActiveSync and select the Options menu. On the Sync Options tab, select the application and then click the Settings button. A dialog will be displayed that will allow removing the application's CASL ActiveSync setting.

Optionally, the utility CASLremas can be used to remove a CASL ActiveSync provider. There are two optional command line arguments:

`-CreatorID id`

Id is the application creator ID. If you do not specify `-Creator ID`, then the CASL entry will be removed.

`-Silent`

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Using this will remove the prompt that asks if you are sure you want to remove the ActiveSync provider and will remove the prompt that indicates the ActiveSync provider has been removed. Error prompts will still be shown.

Here is an example:

```
CASLremas -CreatorID FRED -Silent
```

This will remove the CASL ActiveSync provider FRED.

Important Note for selecting the CASL ActiveSync Directory!

You cannot have two different applications (creatorIDs) using the same CASL ActiveSync directory! This is because the .CDB/.CDI files do NOT have the creatorID in them. Therefore CASLsync cannot determine the difference between one .cdb or another by creatorID. Thus CASLsync would try to synchronize all files in the directory multiple times, once for each application configured in the directory.

Also, because of this new PPC databases (from .cdi files) would not be assigned to the correct application (by creatorID) in the PPC.

Also, you CANNOT use the same directories to synchronize PALM and PPC databases.

Configuring Microsoft ActiveSync Manager

When you place your PPC into its docking cradle, the Microsoft ActiveSync application will run.

Before performing CASL ActiveSync you must enable those CASL applications to be synchronized. To do this press the options button on the toolbar of the Microsoft ActiveSync application.

Selecting Applications for Synchronization

This brings up a dialog box with three tabs. Select the “Sync Options” tab. You will see a list of applications that ActiveSync has knowledge of with check boxes next to them. The CASL applications are indicated by the CASL icon and having a name of CASL: <application name>. If you want ActiveSync to synchronize an application click in the check box to the left of its icon and a check mark should appear.

If the application does not exist in the list or it does not have a check box then CASL ActiveSync for that application has not been installed or something failed in its install.

Setting Synchronization Method (On Connection or Manual)

Now select the schedule tab of the options dialog box. In the Desktop Schedule section select “On Connection”. You may select “Manually” but this means that you must press the “Sync” button on the main window to actually perform the synchronization.

Do not select “Continuously” when CASL applications are selected for synchronization as CASL ActiveSync has NOT been optimized for continuous synchronization.

Once you have selected your Desktop Schedule, press the OK button. This will cause the ActiveSync application to begin synchronization with the selected application(s). If you selected “On Connection”, the synchronization will be run. If you selected “Manually”, the synchronization will just collect information on the number of items not synchronized for each application selected. Pressing the “Sync” button completes the synchronization.

Synchronization of CASL Databases

You can now perform normal synchronizations of your PPC databases with the PC.

Whenever you wish to synchronize your PPC with the PC, simply place it into its docking cradle. The Microsoft ActiveSync Manager application will run and perform the synchronization (as described at the end of the previous section).

After synchronization has completed you can remove the PPC. (Or leave it connected to recharge the battery.)

The ActiveSync Manager continues to run as long as the PPC is installed. Any record that change on the PPC will be noted as items not synchronized in the application's display. You can press the Sync button again to synchronize these. CASLsync does NOT keep track of records that have changed in the PC side database. However, when you press the sync button, the PC side records will be re-read and synchronized if necessary.

PC CASL ActiveSync Database Files (.cdb/.cdi)

CASLsync uses the same format database files as used by CASL's Palm HotSync. These consist of files in the application's Caslsoft® ActiveSync directory with .cdb and .cdi extensions. The name of the database file in the PPC is the same as the .cdb/.cdi file without the .cdb/.cdi extension.

The .cdb files are the usual place for database information to be stored in the PC. If an application's database exists on the PPC but not on the PC, the .cdb file for it will be created. **Note: the .cdb file will NOT be created until there is at least one record in the PPC database.**

If the .cdb file is deleted from the PC (erroneously) it will be recreated after TWO full synchronization cycles (removing and replacing of the PPC from its docking cradle).

If a .cdb file has no existing database on the PPC, its #SYNCMODE parameter is forced to "NO_SYNC" (see #SYNCMODE setting section below) and will not be synchronized.

The .cdi files are used to force initial database records down the PPC. Only .cdi files can be used to create new database files on the PPC. If a database already exists on the PPC for the .cdi file, it is deleted and replaced by the new information. After the data from the .cdi files are synchronized to the PPC, the .cdi file is renamed to .cdb.

You can rename a .cdb file to .cdi to force its information down to the PPC without regard of the information in the PPC database.

When the synchronization process has completed, the previous .cdb/.cdi file will be renamed with a .bak extension and a new .cdb file is created (assuming something changed).

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#SYNCMODE setting

The .cdb file has a number of parameters within it. The #SYNCMODE parameter is of special use by CASLsync. This parameter is used to decide if a file is to be synchronized or not or how to resolve changed record conflicts (the same record is changed in both the PC and PPC side database).

The following give the useful values for the #SYNCMODE parameter:

NO_SYNC	Do not synchronize this file
MERGE	Synchronize, manually resolve changed record conflicts
PDA_TO_PC	Synchronize, PDA records are always used in conflicts
PC_TO_PDA	Synchronize, PC records are always used in conflicts

A dialog box displayed by the ActiveSync Manager program handles manually resolved conflicts.

There is a SYNCMODE associated with the PPC database as well. That SYNCMODE has priority and if they do not match, the .cdb file's SYNCMODE will be changed to match.

Log Files

CASLsync creates log files of its operations on both the PC and PPC. These log files are an invaluable tool in diagnosing any problems that might crop up (to be read by CASL tech support only). These files should be sent with any bug report that you might have about CASLsync.

The log files come in sets of two. On the PC they are called caslsync.log and caslsync_1.log and reside in the logged in user's temp directory in the CASL subdirectory. On the PPC they are called casldev.log and casldev_1.log and reside in the /temp directory. (The casldev.log files are forced to be only 50K bytes long to keep from hogging the PPC memory.)

To get the PPC log files you use the Explore tool bar button from the ActiveSync Manager application. Select "My Pocket PC" and then select the Temp directory. You must COPY the log files out of this directory into another before you can access them to be sent to CASL.

How to Get More Information

Check our web site for additional CASL web sites, mail lists, FAQ's, updates, and new releases.

The CASLsoft home web site is <http://www.caslsoft.com>

The support site is <http://www.caslsoft.com/support.htm>

The support message board is <http://www.caslsoft.com/phpBB2>

Helpful links to other sites is <http://www.caslsoft.com/links.htm>

Download the latest release from <http://www.caslsoft.com/download.htm>