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Locating Records In Hand Coded List Boxes

There is no standard way to find and locate to the record in a list box which uses a hand-coded queue. You can locate jump to a record by pressing a key, but that works for the single first letter only. Andrew Popoff shows how to implement incremental search for any list box which uses a hand-coded queue.

Posted Tuesday, May 12, 2009

What You Need To Know About Web Analytics

What is web analytics, and why should you care? If you are responsible for at least one web site, and that site has an impact on your business, Mark Riffey wants you to understand the difference web analytics can make to your business.

Posted Tuesday, May 12, 2009

Cloning Windows With VMWare Converter

Virtualization is a frequent topic in the Clarion world, and in the Clarion context virtualization refers to the ability to run one version of Windows inside another version of Windows. More specifically, this provides a way of running the old 16 bit IDE on 64 bit Windows. And as Steve Parker shows, you can even convert your existing Windows install to a virtual machine clone.

Posted Thursday, May 14, 2009

Clarion 7 Build 5615 Review

SoftVelocity released Clarion 7 Gold in the middle of April (2009) and proceeded to take some heavy flak over missing features and outright bugs. It's six weeks later and company has shipped build 5615 which addresses a number of key issues/bugs and adds some new functionality.

Posted Thursday, May 28, 2009

Windows 7, Virtual Machines, and Backup Lessons Learned

Thinking about installing the Windows 7 release candidate? Dave Harms wasn't, until a botched Vista 64 install made the prospect more appealing. Along the way Dave learned (and relearned) a few lessons about Windows partitions, backups and virtual machines.

Posted Friday, May 29, 2009

A C7 Slider Control

Clarion Magazine last published an article on slider controls ten years ago, and unfortunately that code no longer works

Latest Free Content

Clarion Sites

in Clarion 7. Here's a version by Lee White and Bob Dobbins that gets the job done.

Posted Friday, May 29, 2009

SoftVelocity Releases C7 Build 5646, C6 9059

SoftVelocity has released Clarion 7 Gold build 5646 and Clarion 6 release 9059. C7 review to follow.

Posted Friday, May 29, 2009

PDF for May 2009

All articles for May 2009 in PDF format.

Posted Sunday, May 31, 2009

[Last 10 articles] [Last 25 articles] [All content]

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Clarion Magazine is more than just a great place to learn about Clarion development techniques, it's also home to a massive collection of Clarion source code. Clarion subscribers already know this, but now we've made it easier for subscribers and non-subscribers alike to find the code they need.

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Printed Books

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○ » Clarion Tips & Techniques Volume 4 - ISBN 978-0-9784034-0-9

Clarion Blogs

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❍ » Clarion 6 Tips & Techniques Volume 1 - ISBN: 0-9689553-8-X

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❍ » Clarion 5.x Tips and Techniques, Volume 2 - ISBN: 0-9689553-6-3

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We also publish Russ Eggen's widely-acclaimed Programming Objects in Clarion, an introduction to OOP and ABC.

From The Publisher

About Clarion Magazine

Clarion Magazine is your premier source for news about, and in-depth articles on Clarion software development. We publish articles by many of the leading developers in the Clarion community, covering subjects from everyday programming tasks to specialized techniques you won't learn anywhere else. Whether you're just getting started with Clarion, or are a seasoned veteran, Clarion Magazine has the information *you* need.

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Dave Harms

ISSN

Clarion Magazine's ISSN

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About ISSN

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Clarion Magazine

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Webinar: Clarion and Continuous Integration

The next ClarionLive Webinar is Friday, June 5. Rick Martin will be presenting "Clarion and Continuous Integration". Topics include: What is continuous integration; Why use version control; Clarion and CVS; AppMonitor (automated saving of APP/DCT files); WinCVS (GUI end user client tool for CVS); Building an APP file from WinCVS; claInterface (command line utility for Clarion); Integrating MSBuild and Clarion; Integrating CruiseControl.Net and Clarion.
Posted Tuesday, June 02, 2009

iQ-Notes Updated

An updated version of is iQ-Notes now available. Features include: Unlimited Notes can be created and resized; Archive Notes, Print Notes, Encrypt Notes and Sort Notes; Notes are not stored in a text or ini file that are easy to read or hack from other people touching your computer; Synchronize notes with a server when using multiple computers; Expense and Time Tracking functionality on each note with Start/Stop Timer and time-sheet tracking; Set an alarm on the note so it pops up at a certain date and time; Attach notes to web pages, spreadsheets, applications, anything and have them automatically open; Clipboard Manager remembers everything you placed on your Windows clipboard and easily create a note from something you've previously placed on the clipboard; Network send option that can securely send notes to other iQ-Notes users on the network or through the internet; Automatic saving of notes with nine automatic backups behind the scenes; Support for English, French, Italian, Spanish, Portuguese, and Dutch languages.
Posted Tuesday, June 02, 2009

Handy Tools June Newsletter

The June CHT newsletter features three sample applications combining zip file creation with FTP transfer, emailing and HTTP POSTing. There's also an example of a streaming video player.
Posted Tuesday, June 02, 2009

Lodestar Software Email

If anyone has recently sent an email to Lodestar Software and it's either gone unanswered or was rejected because a virus was found, please send your email again. AVG was reporting false positives; this situation has now been corrected.
Posted Tuesday, June 02, 2009

Noyantis SkinFramework 1.02

Version 1.02 of the Noyantis SkinFramework wrapper template has been released. Changes include: Global class introduced - now all methods can be accessed from child procedures (including in Multi DLL projects); New Control Override

extension template added allowing the skin of individual controls to be overridden with a completely different skin; Bug fix - app could GPF if ToolbarClass used. The new version can be downloaded from the Members area using the original download and registration details contained in your sales emails.

Posted Tuesday, June 02, 2009

amazingGUI 1.2.0.1

amazingGUI version 1.2.0.1 has been released. All customers are entitled to download this version. Changes include: Runtime theme selection; Classes and templates have been reorganized resulting in a better code generation; Help file has been updated.

Posted Tuesday, June 02, 2009

Jane Fleming Webinar Notes

Jane Fleming has put together a few notes specifically relevant to the code-signing stuff - purchasing a certificate through Lindersoft, downloading the SDK from Microsoft and creating a PFX file, and setting up SetupBuilder for code-signing. The notes do not go into the "why" of code-signing, and don't address manifests or other issues.

Posted Tuesday, June 02, 2009

FullRecord 2.21

FullRecord 2.21 is now available. Changes include: The field audit window now can recover any audited field value by selecting it in the list; Full support to GUID autonumber field method to the audit files; InspectField (Legacy) was not working rights when file to field recover is opened in another thread or workstation; New PostgreSQL examples; Fix for spurious read operations saved if you were using Clarion 6.1 or before.

Posted Tuesday, June 02, 2009

Clarion 6 UAC Installation Fix 1.30

Version 1.30 of the Clarion 6 UAC Installation Fix application is available for download. It supports both 32- and 64-bit Windows. For compatibility reasons, it's still called "Vista fix". The Windows Vista, Windows Server 2008 and Windows 7 operating systems provide a new security feature named User Account Control (UAC). An "UAC-aware" installer is required in order to correctly install your applications. Even if your Clarion 3rd party vendor provides a UAC-aware installer, it's not possible to correctly auto-detect the installed Clarion version. The original Clarion 6 installer is unable to write to the WIN.INI file and to update the system path environment variable on Windows Vista, Windows Server 2008 and Windows 7. These actions require a UAC-aware installer with administrator execution level privileges. The Clarion 6 Vista Installation Fix freeware application makes the appropriate WIN.INI modifications so 3rd party installations can detect Clarion 6 on Vista, Windows Server 2008 and Windows 7 machines. It also adds the Clarion \Bin path to the system path environment variable. You can redistribute this application to your customers. You don't need this fix for Clarion 7.

Posted Tuesday, June 02, 2009

Product Scope 7 Viewer 7.8.377

Product Scope 7 Viewer version 7.8.377 is now available.

Posted Tuesday, June 02, 2009

vuMail 3.0 Beta

vuMail can now be used to both send and receive emails. Changes include: vuMailSaveName() - Lets you specify the 'save' name of the next email sent; ; vuPop3SetServer() - Sets the name of the POP3 Server in vuMail; vuPop3GetServer() - Returns the name of the POP3 Server set by vuMail; vuPop3SetUser() - Sets the UserId for the POP3 Server in vuMail; vuPop3GetUser() - Returns the UserId for the POP3 Server set by vuMail; vuPop3SetPassword() - Sets the Password for the POP3 Server in vuMail; vuPop3GetPassword() - Returns the Password for the POP3 Server set by vuMail; vuPop3SetFolder() - Sets a folder name where attachments will be saved in vuMail; vuPop3GetFolder() - Returns the folder name where attachments are saved set by vuMail; vuPop3Connect() - Connects to your POP3 account; vuPop3Disconnect() - Disconnects from your POP3 account; vuPop3Delete() - Deletes selected email; vuPop3Count() - Returns the number of emails waiting on the POP3 server; vuPop3Size() - Returns the size of the selected email (in bytes); vuPop3LoadHeader() - Loads the selected email's header into memory; vuPop3GetDate() - Returns the email date information from the email header; vuPop3GetFrom() - Returns the "From" address from the email header; vuPop3GetSubject() - Returns the Subject from the email header; vuPop3GetReturnPath() - Returns the Return path of of email from the email header; vuPop3GetMessageId() - Returns the Message-ID from the email header; vuPop3LoadEmail() - Loads the entire email into memory; vuPop3GetPlainText() - Returns the Plain Text content of an email; vuPop3GetHTMLText() - Returns the HTML content of an email; vuPop3HaveAttachments() - Returns the number of attachments of an email; vuPop3AttachmentName() - Returns the name of a specific attachment; vuPop3SaveAttachment() - Saves a specific attachment to disk; vuPop3SaveAttachments() - Saves all attachments to disk.
Posted Tuesday, June 02, 2009

J-Walk Announced

StrategyOnline's J-Walk is the company's philosophy for Clarion third party product development.
Posted Tuesday, June 02, 2009

TDC Beta 2.5

TDC Beta 2.5 is now available. Version Control System changes include: Now the notification emails are in HTML format also; New configuration option to show with another color the projects where the user has files "checked out"; New configuration option to set the Audit trail for this module; New option in the main menu (available only for Administrator users) to see the Audit trail; Improved the report for printing the history for each file in the project. Now it possible to select which files want to print and the period; New configuration where it is possible to select external compressors to use to compress the files saved in the Database; Now it is possible to make the "Get Last Version" action not only for the selected files but also for the linked ones to them; Now selecting any project in the tree structure it is possible to make a "Get Last Version" for all the files included in that project; Now some key windows have the possibility to be resized and the new size is kept between sessions; Now the program remember the column selected to sort data in "Project file content" between sessions. Tracking System changes include: Now it is possible to export the Issues list to Excel; Now the notification emails are in HTML format also; Changed the main window, added new options to filter issues (by Product, Operating system and Customer or Companies); Added new buttons to change the priority (up and down) order of the issues; New configuration option to set the Audit trail for this module; New option in the main menu (available only for Administrator users) to see the Audit trail; Improved the report for printing the issues list. Now it s possible to filter the report by company, product and operating system; In Issues form now it is possible to create and save e-mails related with each issue; Improved the handle of Requirements, now it is possible to create "New functionality", "Change functionality" or "Enhancement". Added new fields to the Form (like Justification,

Alternative solutions, planning version, deadline, etc.); Added new option in the menu options in Issues Form to write "Internal notes"; In Issues Form now it possible to inform and save the work log. It is also calculated the total plannified time in the Work log option; In project "Dashboard" added fields to filter by date, by Customer and by Product; Now in "Customers (or Companies)" Form it is possible to define the structure of the company (departments and/or sections); Now in "Contacts" Form it is possible to assign the department/section belonging to; In Companies and Contacts window now it is possible to switch the view of the Contacts between "Structure" and "List"; In "Customers (or Companies) and Contacts" Browse now it is possible to open the Web page of the company by making click with the mouse. The same sending emails to the Contacts; Now some key windows have the possibility to be resized and the new size is kept between sessions; Now in the Tracking system main window it is showed the percent of completion in the select issue in the "issue information" square below the list on the left.
Posted Tuesday, June 02, 2009

iQ-XML 2.50

iQ-XML version 2.50 is now available for Clarion 7 and Clarion 6. Once it is installed, in Clarion 7 select Tools / Edit Template Registry / Register. Navigate to your Clarion7 Directory \ templates\win and select iqxml.tpl.
Posted Tuesday, June 02, 2009

Clarion Third Party Profile Exchange

A major update to the Clarion Third Party Profile Exchange is now available.
Posted Tuesday, June 02, 2009

amazingGUI Upgrade Extension

Daniel Ruzo has announced an extension to the upgrade periods for amazingGUI. Most upgrade periods should have been expired with version 1.1.2 which includes Clarion 7 installer. But version 1.2 will be released next week, with improved runtime selection by the final user. All expired upgrade periods are extended until this new release.
Posted Wednesday, May 20, 2009

Weekly Webinar #9: Robert Paresi

Weekly Webinar #9 Welcomes Robert Paresi from InnQuest Software. The webinar is scheduled for Friday, May 22nd at 9am PDT / 12noon EST (GMT -8). Robert's topics include: What is XML, when/how is it used and what it looks like; The three common ways to handle XML in Clarion (Clarion, iQ-XML and XFiles); Reading and writing XML; Reading complicated XML files; Debugging functions in iQ-XML; Schemas; XML-Spy; SOAP headers; Web services.
Posted Wednesday, May 20, 2009

Data Mapper 1.82

Clarion Data Mapper 1.82 has just been released. It can now display the Referential Integrity Constraint info from your Clarion dictionaries.
Posted Wednesday, May 20, 2009

CPCS Support Availability

CPCS Support will be unavailable from Thursday, May 21, 2009 through Thursday, May 28, 2009. Install codes for

any products purchased during this period will be emailed as quickly as possible after the 28th. Emails and forum messages regarding support issues will be handled as quickly as possible when the office reopens.
Posted Wednesday, May 20, 2009

Noyantis SkinFramework 1.01

Version 1.01 of the Noyantis SkinFramework wrapper template has been released. Modifications include: Variables now accepted for Skin Resource Path and Ini; Remap "ClaChildClient" Window Class setting added. The new version can be downloaded from the Members area using the original download and registration details contained in your sales emails.
Posted Wednesday, May 20, 2009

StrategyOnline Company Policies Updated

StrategyOnline has posted a page outlining updated company policies covering support (paid for and free), privacy, etc.
Posted Wednesday, May 20, 2009

TaskPanel 2.0.124

Version 2.0.124 of XP-Taskpanel is now available for download. This download is only available to subscribers with a valid Gold Subscription. This new build includes a new option to override disabled colors when using XP-Theme with XP-Taskpanel. This will not change anything in existing apps, but gives you an option to override the color for disabled tasks when using XP-Themes which was not possible.
Posted Wednesday, May 20, 2009

Codejock SkinFramework ActiveX Wrapper Template

Noyantis Software has released the Codejock SkinFramework ActiveX wrapper template. A demo is available. The control and template combination provides Clarion developers with the ability to add Windows Visual Style architecture to their apps in seconds. Add a Global Extension template then add an Extension template to your main app frame. The Codejock Xtreme SkinFramework ActiveX provides maximum compatibility with existing Windows XP and higher Visual Styles that can be used on any Windows platform. Several predefined Visual Styles are provided, including Office 2007, Windows XP Royale Blue, and Windows XP Luna style. The price of the SkinFramework template is $75. The template is ABC and Legacy, c55, c6 and C7* compatible. (At present menus in C7 cannot be skinned.) Other templates currently available cover the Shortcut Bar, Command Bars (inc Ribbon Bars), CalendarPro, Property Grid, Task Panel, Docking Panes and Report Control ActiveX controls.
Posted Wednesday, May 20, 2009

Build Automator 1.60 Beta 4

The Build Automator is included in the Icetips Gold subscription but is also sold separately. This build introduces full support for compiling Clarion 7 and Clarion.NET solutions and projects. It also adds a new internal function, FileExists, that can be used when setting variabls in the same way as the Clarion Exists() function can. It works on both files and folders. In order to install this build you need to have a valid Maintenance Plan. It is only available as a full install and not through the web update
Posted Wednesday, May 20, 2009

Noyantis Software Bundles

The Noyantis SuitePro Wrapper Templates bundles includes: Noyantis ShortcutBar Wrapper Template ver.1.18; Noyantis CommandBars Wrapper Template ver.1.18; Noyantis CalendarPro Wrapper Template ver.1.19; Noyantis PropertyGrid Wrapper Template ver.1.07; Noyantis TaskPanel Wrapper Template ver.1.09; Noyantis DockingPane Wrapper Template ver.1.03; Noyantis ReportControl Wrapper Template ver.1.04. Also there is a 40% discount available for Clarion developers who want to buy SuitePro 2009 13.x.x.
Posted Thursday, May 07, 2009

iQ-XML 2.50 Nearing C7 Compatibility

The iQ-XML source has been updated, removing all external templates so everything for iQ-XML is 100% pure Clarion source. This will make it simple now to migrate it over to Clarion 7. The layout of DebugMyQueue and DebugQueue functions has also been changed. The C7-compatible release is expected as soon as the next C7 release goes out.
Posted Thursday, May 07, 2009

Noyantis ReportControl 1.05

Version 1.05 of the Noyantis ReportControl wrapper template has been released. Changes include: Row editing facilities added; Individual columns can now be set to editable. The new version can be downloaded from the Members area using the original download and registration details contained in your sales emails.
Posted Thursday, May 07, 2009

Build Automator 2.0.342

Build Automator 2.0.342 is now available for download. You must be logged in to your account in order to be able to download the new build. This new build only includes some minor fixes to the Legacy version of the Magic Buttons template. It also includes a fix to the "Icetips Support" button on both the ABC and Legacy template which did not work in Clarion 7.
Posted Thursday, May 07, 2009

MetaDraw Control Wrapper

KlariSoft has released a Clarion wrapper for the Bennet-Tec MetaDraw ActiveX component. Features include: Image display with zoom and scroll; Image creation; Labeling; Annotation; Diagramming; Multimedia; Signature capture; Images with hotspots; Touch screen interactive interfaces. The Clarion class wrapper is ABC/Legacy compatible and works with Clarion 5.5, 6.3 and 7. Demo is available. A template/control bundle is available from Klarisoft.
Posted Thursday, May 07, 2009

Codejock ReportControl Wrapper Template

Noyantis Software has released the Codejock ReportControl ActiveX wrapper template. A demo program of the template in action can be downloaded. Features include: Multiple Report Controls (Browses) containing various types of content.; Automatic Clarion BrowseBox Enhancer (all settings automatically read from a standard Clarion browse); Integrated Field Picker; Integrated Preview Mode; Tree View Mode; Report (Browse) Printing Support; Multiple color themes; Multiple languages; Multiple Selection; Resize, Remove, and Reorder Columns; Hide and Show Column Headers; Sort Data Across Multiple Columns; Auto Column Sizing; Hierarchically Group by Column; Column Header Alignment; In-Place Cell Editing (to be added later today); Individual Cell Attributes (inc. Text Color, Background Color, Custom Font,

Cell Alignment, Text Formatting); and more. The ReportControl template is $85 and is ABC and Legacy, c55, c6 and C7 compatible. Other templates currently available cover the Shortcut Bar, Command Bars (inc Ribbon Bars), CalendarPro, Property Grid, Task Panel and Docking Panes controls.

Posted Thursday, May 07, 2009

Clarion Magazine

Locating Records In Hand Coded List Boxes

by Andrew Popoff

Published 2009-05-12

There is no standard way to find and locate to the record in a list box which uses a hand-coded queue. You can jump to a record by pressing a key, but that works for the single first letter only.

In this article I'll explain how to implement incremental search for any list box which uses a hand-coded queue.

The task

I have a list box which displays a queue, and I must implement an incremental search on the selected column which is defined as type STRING. Specifically, I need to:

- Catch keystrokes when the list box has focus.
- Put all the letters together and get the string to search.
- Find this string in queue and select the appropriate record in the list box.
- Decrease the search string when "Backspace" button is pressed.
- Clear the search string when I move up or down or do anything else to invalidate the search.
- Clear the search string when some period of time has elapsed.
- Use ENTRY, STRING or PROMPT control as a locator.

The class

I've created a class to manage list box searching. Here's the declaration (from CFCQLocator.inc):

```
CFCQueueLocatorClass  CLASS(CFCWndProc),TYPE,MODULE('CFCQLocator.clw'),|
  LINK('CFCQLocator.clw',_CFCLinkMode_),DLL(_CFCDllMode_)
LocatorQueue          &QUEUE
QueueField            ANY
LocatorVariable       ANY
LocatorFeq            LONG
ListBoxFeq            LONG
cstrLocatorVariable   CSTRING(1024)
FlagUseLocator        BYTE
TimerID               ULONG
LastLetterTime        ULONG
ClearTime             ULONG
```

```
Construct        PROCEDURE
Init             PROCEDURE(*QUEUE inLocatorQueue,|
                 LONG inListBoxFeq,|
                 <*ANY inLocatorVariable>,|
                 <LONG inLocatorFeq>)
Kill             PROCEDURE
SetActiveLocator    PROCEDURE(*ANY inQueueField)
SetClearTime        PROCEDURE(LONG inTime)
NewSelection        PROCEDURE
ClearLocator        PROCEDURE
RemoveLocator       PROCEDURE
TakeAccepted        PROCEDURE,VIRTUAL
CallBackProc        PROCEDURE(ULONG hWnd,ULONG inMsg,|
                 ULONG wParam,LONG lParam),LONG,VIRTUAL
           END
```

I'll only show excerpts of the class code in this article. You can read the source (with comments) for more information (see the link at the end of the article).

The implementation

There is only one real problem: how to catch the keystrokes? And there is a simple solution.

I need to detect the Windows WM_CHAR message. This message is posted to the window which has the keyboard focus when the key is pressed. The WM_CHAR message simply contains the character code of the key that was pressed.

Clarion's ACCEPT statement doesn't expose this message, so I must *subclass* the window. Subclassing allows me to process all the Windows messages, not just the ones passed along by ACCEPT.

I wrote a class for subclassing a few years ago. It's called CFCWndProc and you can find the code in the downloadable source. Subclassing is not the theme of this article, however.

So, I must subclass the list box. For each WM_CHAR message I must add each letter to the search string, unless it's a backspace key in which case I must subtract one letter from the search string. I use a CSTRING for the search string so I don't have to CLIP when adding new characters to the end.

Here's the subclassing code that builds the search string. The code is in the subclass procedure and executes whenever the user presses a key. wParam contains a character code:

```
IF inMsg = loc:WM_CHAR
  IF wParam = 8 ! process a BackspaceKey
    SELF.cstrLocatorVariable = |
      SUB(SELF.cstrLocatorVariable,1,|
      LEN(SELF.cstrLocatorVariable)-1)
  ELSE
    SELF.cstrLocatorVariable = |
      SELF.cstrLocatorVariable & CHR(wParam)
  END
```

```
        END
```

OK. Now I have a search string and I must find it in the queue. I must know the queue column on which I will do the search. I think that you all know the simple way to find a record in the queue. I can loop through all the queue records and find a match with a search string, using UPPER to avoid any case issues and SUB to match just the locator string. Once I know the position of the record in the queue I can easily move to the desired record in the list box with a SELECT statement.

In the following code SELF.QueueField is a ANY variable which refers to the queue field. You can see that I stop the search when I find the first record.

```
        FlagFind# = FALSE
        LOOP counter# = 1 TO RECORDS(SELF.LocatorQueue)
          GET(SELF.LocatorQueue,counter#)
          YIELD
          cstrTempVar = SELF.QueueField
          IF UPPER(SUB(cstrTempVar,1,LEN(SELF.cstrLocatorVariable))) = |
             UPPER(SUB(SELF.cstrLocatorVariable,1,LEN(SELF.cstrLocatorVariable)))
            FlagFind# = TRUE
            BREAK
          END
        END
        IF FlagFind# = TRUE
          SELECT(SELF.ListBoxFeq,counter#)
          POST(Event:NewSelection,SELF.ListBoxFeq)
        END
```

Clearing the search string

I must clear the search string when I take certain actions on the list box, such as when I press the up or down key or when I click on the list box with the mouse. I can ALERT these keys in the list box but I think that a better way is to catch them in the subclassing procedure. Here's the code:

```
        IF inMsg = loc:WM_KEYUP
          CASE wParam
          OF DownKey OROF UpKey OROF HomeKey OROF PgDnKey |
             OROF PgUpKey OROF EndKey OROF EnterKey OROF CtrlEnter |
             OROF CtrlHome OROF CtrlEnd OROF CtrlPgDn OROF CtrlPgUp
            SELF.ClearLocator()
          END
        END
        IF inMsg = loc:WM_LBUTTONUP OR inMsg = loc:WM_RBUTTONUP
          SELF.ClearLocator()
        END
```

The ClearLocator() method just clears the search string variable.

I also want to clear the search string when a predetermined period of time has elapsed. I'm using the windows timer for this purpose.

There are two Windows API functions for the timer: SetTimer and KillTimer. Windows sends the WM_TIMER message to the list box after I have set the timer. I catch this message using subclassing again:

```
IF inMsg = loc:WM_TIMER AND wParam = SELF.TimerID
  IF CLOCK() - SELF.LastLetterTime >= SELF.ClearTime |
      AND LEN(SELF.cstrLocatorVariable)
    SELF.ClearLocator()
  END
END
```

The SELF.LastLetterTime variable stores the time of the last keystroke. The SELF.ClearTime variable contains a time period in milliseconds. I just clear the search string when that time has elapsed and no key has been pressed.

The entry locator control

You can implement the search with or without a locator control. If you use a STRING or PROMPT control it will only display the search string. An ENTRY control will display the search string and you can type the search string inside the control also.

The class will locate to the list box record when EVENT:Accepted occurs. For example, this happens when you press a tab key on the control. I could trap EVENT:Accepted on the locator and call TakeAccepted manually, but instead I use Clarion's REGISTEREVENT function. The following code installs the TakeAccepted method as the Accepted event handler for the locator:

```
REGISTEREVENT(EVENT:Accepted,ADDRESS(SELF.TakeAccepted)|
  ,ADDRESS(SELF),,SELF.LocatorFeq)
```

Using the class

To use the class you declare an instance of CFCQueueLocatorClass:

```
QL          CFCQueueLocatorClass
```

And then after the window opens you call the Init method. You pass in the queue containing the data, the field equate of the list box, the locator variable and the field equate of the locator field.

```
QL.Init(Browse:Queue,?List,loc:Locator,?loc:Locator)
```

Then you just need to tell the class which field in the queue is the sort field:

```
QL.SetActiveLocator(BRW1:StringField)
```

The source

In the downloadable source you can find the classes needed to implement incremental search.

- The CFCQLocator.* files contain the locator/search class.
- The CFCWndProc.* files contain the subclassing class.
- The CFCAPI.inc file contains Windows API prototypes.

I have also included a simple hand-coded example (using_locator.*) which demonstrates the class. It works with C6 and C7.

Download the source

Andrew Popoff is a Russian developer who has worked with Clarion since 2000. Previously with SealSoft, Andrew develops corporate applications, and is also the developer of the third party products xXPFrame, xXPPpopup and xReportPreview. He writes a blog at news.clarionlife.net and is the content manager of the Russian Clarion resource clarionlife.net. He occasionally writes Clarion articles for the Russian developer community.

Reader Comments

Posted on Tuesday, May 12, 2009 by Bruce Johnson

Hi Andrew,

Was there a reason you chose to use Subclassing for the keystrokes rather than Alert keys for the control?

Cheers
Bruce

Posted on Tuesday, May 12, 2009 by Guennadi Iounok

Andrew, great article! My congratulations!

Posted on Wednesday, May 13, 2009 by Andrew Popoff

>Was there a reason you chose to use Subclassing for the keystrokes

Becouse I find this way more handy.
For example, I need to think about what ranges are set for the ALERT.
It is not necessary when I use subclassing.

Posted on Thursday, May 14, 2009 by Bruce Johnson

Hi Andrew,

You don't need to pass the Queue to the Init procedure, it's available as the prop:from of the inListBoxFeq.

Cheers
Bruce

Posted on Wednesday, May 20, 2009 by Bjarne Havnen

On the question of using subclassing versus alert: Using the IMMediate attribute on a listbox implictily alerts all keys so one can use the regular Event:Alertkey to

trap the keystrokes. I use this for locator functionality in the free AdiQueueHandler template.

Add a comment

Clarion Magazine

What You Need To Know About Web Analytics

by Mark Riffey

Published 2009-05-12

You can't swing a dead NTVDM these days without hitting a web analytics package these days.

What exactly is web analytics? And once I get past that, what questions should I be asking?

A few that come to mind are "Why should I care?", "What's so special about it?", "How does it work?", "What tools are available?", "What impact does it have on my business?", "How does it change the design of my website?", "What in the world does this have to do with Clarion?"

Let's take them one at a time.

What is web analytics?

Web analytics is the tracking, collection, measurement and analysis of data that describes the behavior of your website visitors.

Tracking, measurement and analysis of web visitor behavior isn't new. People have been analyzing web server logs since web servers first created them.

Tracking and analysis of user behavior is also not a new technology. For example, we had activity log reporting tools for the IBM mainframe Customer Information Control System (CICS) and for various database and transaction processing systems like IBM's IMS, Cullinet's (now CA) IDMS and IBM's DB/2.

Likewise, business phone systems and even some primitive tools have measurement and analysis tools. Similar techniques have been used to measure and analyze the behavior of users, readers and communications tools for business purposes for at least a century - and likely much longer.

Why should I care? (Part 1)

You should care about website analytics so that you can make better, more effective decisions about the content, structure and design of your website. In a lot of cases, the normal tool for making decisions of this nature is the seat of your pants. The problem with that "tool" is that it is biased by the views of the person attached to it.

Data can be biased if it is collected or analyzed through a biased viewpoint or collection mechanism, but it'll still likely be better than the seat-of-the-pants decision that 8 point blue text on a red background is just fine.

See, there's *my* bias.

The value of behavior measurement and analysis should be obvious: Instead of guessing what people do and why they do it, you have factual data to help you make strategic, design and copy decisions about your website.

If you've watched a user sit down and use one of your Clarion applications, you've probably had a moment (or 20) of clarity that your own application testing simply didn't provide: You saw how real users actually try to use your program.

Ouch. What made them do it *that* way?

Similarly, web analytics gives you a boatload of information about how people use your website. Frequently, you'll find that they don't work the way you think they do. You can use this information to improve your site - and taking that quite a bit further, to determine what parts of your website make people leave, what makes them stop the purchase process or otherwise fail to do what you want them to do. I'll examine that a little later.

What's so special about web analytics?

From an analytics point of view, the biggest difference between the web and most other media is that the web is highly interactive.

Yes, I said media. When you publish applications, news, opinion, data, etc. you're using the web medium, one of many media.

Let's step back a little bit and consider a traditional medium: a newspaper.

What if the New York Times could determine how many people worked on their print edition's famous crossword puzzle each day? Taking that further, imagine how they might take action if they knew these things:

- Which crossword questions readers get right and wrong, or don't filled in at all?
- How long do readers spend working on the crossword puzzle?
- How much time do they spend reading local news vs. national news vs. financial or political news vs. the opinion page?
- How does topic interest vary for in-NYC readers vs. out of state readers vs. upper West side readers vs. homeowners vs. renters vs. men vs. women vs. employed vs. unemployed?
- How many people read the obituaries?
- How many read the obituaries of females vs. males?
- How many looked at particular pages of the stock exchange listings?
- What ads (and types of ads) did people look at and take action on?
- What ads did they not see at all?
- What ads did they ignore?
- What section did they toss in the trash?
- Which section's ads resulted in the most sales (action)?
- What inserts were read and which were discarded?

The New York Times cannot answer these questions about their print edition readers. This makes it difficult for them to sell advertising that guarantees results.

On the other hand, if you have a website you can use web analytics to answer questions exactly like these about visitor behavior, demographics, ad displays and actions taken - without seat of the pants guesswork.

In fact, web site owners can use web analytics to tell them how visitors use their site and to learn more about them so that they *can* guarantee certain results to certain types of advertisers.

How does it work?

There are two primary ways to gather web server visitor data: process the web server log and analyze it later, or collect visitor behavioral data in real-time and analyze it on demand.

Log-based tools analyze the web server's log files. For example, AWStats is a common, free open-source tool provided by many Linux-based web hosts. There are many other log analyzers, free and not-so-free.

The problem with log-based tools is that they don't offer results in real-time. That isn't a huge problem, but real-time analysis allows you (and your site) to become far more agile.

Interactive, real-time tools use embedded javascript to talk to a system somewhere that is aggregating data about your visitors' behavior. Google Analytics falls into this category and it has plenty of company.

Why do I care? (Part 2)

If I have to wait till the end of the month to read my logs so I can run a process that creates a complete view of the month's traffic *and* that takes 5 hours to process, maybe I won't pay as much attention to the logs and my site as I should.

It's all about time.

If you can find out today why your website isn't producing the desired results, why would you wait until the end of the month to make a change intended to correct the problem? Since these tools tend to aggregate the data in real-time, that monthly report is immediately ready to view at midnight on the first of the month. Or five minutes before midnight, if you wish.

Tools like Woopra allow you to watch what visitors are doing on your site *right now*. Not that you can see their screen, but you can see what path they take through the site and how long they linger on each page while they are there.

Via Woopra, I can see that right now there is someone on my blog reading a story about gift cards in retail business. They're using Firefox on Windows and they're in or near Gurnee, Illinois. They've been on the site for 11 minutes so far.

In the big picture, the specific details about this particular visitor aren't all that important.

On the other hand, another part of this tool shows me the aggregate of that same info. It tells me that 60% of my visitors spend 20 or more minutes reading my blog during a visit and another 27% spend between 5 and 20 minutes reading it.

When I compare that to historical visitor behavior info, it tells me something important, especially when combined with other panels that show me what the most common referring site is and what the most common search terms are that bring someone to my site.

All of these factors can play into decisions that you make about your site.

In some cases, these tools allow you to ask visitors a question via a chat interface (they must grant permission first). That seems a bit intrusive, but it also might be incredibly effective for those who have the nerve to try it and who use it prudently.

With the recent introduction of an open, read-only application programming interface (API) to your Google Analytics data, you can expect the availability of dynamic, real-time applications to expand.

What tools do this kind of work?

I'm going to discuss the more interactive tools, ironically because of my seat of the pants observation that you are far more likely to use this sort of tool precisely if it is interactive and easy to use. There is little benefit in discussing an amazing log processing tool that you won't use.

Google Analytics

The leader in the interactive web analytics space is Google Analytics, so I'll refer to that system throughout the remainder of the article.

There are plenty of other tools of this type, but working all the other packages would result in a huge article that few would read or take action on.

If Google Analytics isn't a good match for your measurement and analytical reporting needs, try this link to find something that's a better fit.

Other interactive tools include Woopra and Mint. There's a litany of others, so don't be shy about using the search link above.

When you're hot, you're hot

In addition to log analyzers and Javascript-based tools, there are heatmaps.

A heatmap is a visual tool which sometimes involves testing users with sophisticated eye movement tracking technology. Heatmaps display visually those things that attract your visitors' attention on a site. More specifically, they provide a visual way to see what gets read and clicked on first, and most often.

You can see an example of a heatmap at CrazyEgg.com. Heatmaps are not limited to web analytics, so I suggest using doing a search using the term "web analytics heatmap" to find available options specific to web analytics.

What *else*?

There are tools to drill down into the demographic aspects (age, gender, marital status, parental status, employment status, etc) and psychographic aspects (personality, values, attitudes, interests, lifestyles) of your visitor community.

Some of this is done by Google Analytics and their competition, but most of the services that really go into this in detail are paid services (Quantcast.com, for example).

I'm not going to go into any detail on these two topics, but I want to be clear that avoiding it for the purposes of this article should not imply that this info isn't as important as everything else I've discussed so far. In many cases, demographic and psychographic data is far more important than the user's screen resolution and brand of their browser or operating system.

How does it impact my business?

Earlier I asked a lot of rhetorical questions about things the New York Times could figure out about their paper. You can ask the same questions about your website. If you sell a product, the text on your site's pages are part of what tells Google (and other search engines) to point out your page as a likely answer to a user's search term.

For example, do more people buy when they come to your site by searching for "medical office management software" or do more of them buy when they come to your site as a result of searching for "medical office scheduling software"?

Before you think that this relatively tiny difference in keywords isn't important, consider this story about a guy who owns a site that sells guinea pig information.

He's a rather successful website owner (and a seriously geeky researcher) who started using his research background to drive his curiosity about the buying habits of his site visitors. By studying visitor behavior via analytics, he found that people just starting to consider getting a guinea pig would search for "guinea pigs", while people searching for "guinea pig" were beyond the early stages of research and very close to buying a guinea pig.

Why does this matter? Think about it. He writes books about how to buy a guinea pig, how to care for them and so on. Knowing what stage of the purchase process his prospects are in is incredibly important.

Armed with this info, he now tunes his site so that "guinea pigs" searches go to one page oriented to those in research mode and "guinea pig" searches go to another page oriented toward those ready to buy. He does this because his research shows that they ask different questions, want different info and buy different resources/items.

I guarantee you that the subtle differences in the relationship between search terms and short term behavior go well beyond guinea pigs.

Imagine that you are standing in a trade show booth and some people who walk into the booth have "Just browsing, definitely not ready to buy today" on their badge, while some others might have "Ready to buy TODAY" on theirs. Wouldn't you have different conversations with those two groups of people?

How does it change the design of my website?

I think I just answered the question of how analytics can change your web site, but analytics goes beyond "Which conversation do you have with your visitor?"

It begs the question: What do you want to accomplish with the site? What are the site's primary goals? To sell stuff? To get people to subscribe to a newsletter? To get them to download white papers? Newsletters and white papers might be critical steps in establishing a long-term, quality clientele. If you know this, you'd better be measuring the processes that lead people to those actions.

If you have a shopping cart on your site, analytics might tell you that 40% of the people who add stuff to your cart end up bailing out at page 3 of 5 in the cart. What's on page 3? Clearly there is something on that page that users don't understand, or that makes them angry, or that causes them to lose trust in the transaction for some reason. Analytics points it out, so now you can fix it (or at least test a proposed fix).

If 40% of your visitors are stopping at that point, imagine what might happen to your sales if 20% of those people start continuing to page 4 of the cart. The same type of measurement and analysis can help to improve web sites and web applications that don't sell something.

Google Analytics has a goals tracking feature which tracks a specific action performed by your user that you can measure and analyze. This feature lets you keep totals on the path that people take through your site before they arrive at your cart, or the path they take to get to a newsletter subscription page, a download link, etc.

Analytics can teach you what is important about your site, what is effective about your site and what is not as efficient as it should be.

Perhaps users who buy after subscribing to your newsletter spend 40% more than those who come to the site and buy impulsively without doing anything else on your site. Whatever the behavior is, until you start to measure and analyze it, you're just guessing - if you're doing anything at all.

What does this have to do with Clarion?

First off, Clarion has a number of web technologies that have either been glommed onto it or generated by its template language: Internet Connect, NetTalk Web Server, The Handy Tools Web functionality, Clarion/ASP, Clarion/PHP and Clarion.Net.

If you are creating web-based applications, whether with Clarion or any other tool, then it seems only natural to want to measure the performance of those sites.

Each of the Clarion technologies I've used (NetTalk Web Server and Clarion/ASP) have the ability to use Google Analytics, Woopra and most other real-time (javascript-based) tracking tools.

Not all of them produce standard W3C web server logs, so their ability to produce data that you can process with log reporting systems might be limited, if present at all.

   NOTE: I am not up to speed on which of these tools produce W3C-compliant weblogs, but I would appreciate if those

vendors would add their compatibility information (if any) as a reader comment on this story.

The bottom line is that measuring the use of your applications is a great way to learn a lot about your users and your application. A continuous process of measurement, analysis and fine tuning is often rewarded with more success.

Mark Riffey has been in the software business in one form or another since the early 1980s. His background includes software development for two internationally known enterprise software vendors, the world's premier information systems services company and a Fortune 100 manufacturer. After leaving the ranks of the gainfully employed, he bought a nearly-dead vertical-market software company and grew it to the award-winning market leader in its niche. After selling that company in 2005, he now runs Rescue Marketing, Inc., a marketing, business and technology advisory firm. His business philosophy is simple: Be fair to your customers and yourself; surround yourself with brilliant people who can take a joke, work hard, be a good listener and have a little fun. Mark and his wife Jacki have two boys, Alex and Jonathan. Mark's other interests include Boy/Cub Scouting, backpacking/hiking and almost anything else outdoors, classic blues guitar, golf and photography.

Reader Comments

Posted on Tuesday, May 12, 2009 by Bob Lesiacsek

One thing that the authors of websites don't take into account is that more and more businesses (including mine) are now blocking all traffic to/from the web-tracking sites. In fact, where I work, it's not only blocked at the firewalls and proxy servers and through Websense, the names of hundreds of web-tracking sites are being prevented from even resolving through DNS.

So, what's the experience like for the end-user whose company puts blocks on nearly anything tracking related? It's slow.... dial-up slow...1200 BAUD dial-up slow. My Oracle Metalink support portal now takes approximately one minute to switch from page to page. Same thing on BMC, Wall Street Journal and many, many more. Click on a link, wait one minute for the resolution to the web-tracking to time out, then move on. Very, very frustrating.

Unfortunately, the blocks aren't going to be removed. So, accessing anyone's website who uses tracking (think Omniture, Doubleclick,Google-Analytics...etc) are in for a miserable experience...and unless they're forced to use the support site, probably won't return.

Gathering statistics is no-doubt useful, but unfortunately, you could also drive many corporate customers away.

Posted on Tuesday, May 12, 2009 by Mark Riffey

Bob,

Given the performance situation you've noted, do you feel that the benefit (whatever that is) your business gets from not allowing website owners to track the behavior of their visitors is worth the loss in productivity of a 1200 baud internet?

Im curious what business benefit is gained by blocking google analytics, quantcast. Please elaborate if you can.

Mark

Posted on Wednesday, May 13, 2009 by Bob Lesiacsek

Mark,

I believe that they do a blanket type block because many of those tracking sites are also tied to advertising sources. The main reason is done for security reasons. Since we're not 100% sure of what gets tracked, it was deemed easier just to block everything. Some cookies contain IP addresses and other types of information that the organization just does not want out there in the wild. This applies mainly to hosted solutions. I do know of local solutions that haven't been blocked (as long as the name doesn't start with 'analytics'.somedomain.com). Although, I think that as web traffic is analyzed, rules are updated and additional hot-lists are put into place. I do know that before the blocks went into place, traffic to analytic sites such as 2mdn.net and doubleclick.net generated about 60MB and 50MB respectively per day. Oddly enough, looking at older firewall logs showed that of the top 30 sites, the analytic/ad sites were in all but four places and

generating about 6.85GB of traffic per day.

Additionally, I think that blocks are also there to discourage people from using the web very much at all. Since most commercial sites use some sort of analytics, shunting performance will encourage web users to 'hang up' more quickly. Unfortunately, it also affects those of us who use the web as a tool to solve problems quickly.

Believe me, it's tough to get information when all streaming media, access to blogs (including tech blogs), and other sites are blocked.

Hope this helps!

Bob

Posted on Wednesday, May 13, 2009 by Bob Lesiacsek

Mark,

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Hope this helps!

Bob

Posted on Wednesday, May 13, 2009 by Mark Riffey

2mdn.net and doubleclick.net are *advertising networks* used largely on advertising-funded sites (of all kinds), they are not analytics vendors. Not that my stating that or arguing with a corporate person would ever change anything in that respect :)

I can see why corporate would block advertising networks like doubleclick (et al).

Just to clarify for everyone else out there, Google Analytics, Woopra and the like arent transmitting banner gifs, video, music or storing/retrieving cookies.

They operate using a simple javascript call that passes IP address (mostly for geolocation), browser specs and OS.

Interestingly, blocking Google Analytics doesnt restrict access to any of that data to the server owner, because all of that information is *already* available to the web server no matter what you do - outside of anonymizing your entire web session.

Thanks for clearing that up re: their thought process. Seems like that would make using tech support resources like Clarion Magazine pretty difficult.

Add a comment

Clarion Magazine

Cloning Windows With VMWare Converter

by Steven Parker

Published 2009-05-14

Virtualization is a frequent topic in the Clarion world. In the Clarion context, virtualization refers to the ability to run one version of Windows inside another version of Windows. Until Clarion 7 demonstrated that it is entirely capable of maintaining applications in earlier versions of Clarion (or until each of us, individually, is satisfied with Clarion 7), virtualization was the only way to run Clarion 6.x, 5.x, etc. on a system running a 64 bit operating system. The reason: the old IDE is a 16 bit application and 64 bit Windows does not support 16 bit apps. Mark Riffey described the process of setting up a virtual machine (VM) in Running Clarion On Vista 64.

While virtual machines are no longer *the* way to maintain Clarion applications in pre-7 iterations, it remains (despite my best efforts, see Using Multiple Clarion Versions in C7 and C7 And The Demise Of The Batch Compiler), the received method. That is, despite my best efforts, some members of the Clarion community with whom I work insist on using VMs instead of Clarion 7.

Virtualization is also receiving considerable attention in the rest of the Windows world. Windows 7 Professional and higher, or so the buzz on the net has it, will offer a downloadable XP SP3 virtual machine (see Windows 7 to get XP Mode for compatibility, for example). Further research (Secret No More: Revealing Windows XP Mode for Windows 7) indicates that apps installed in "XP Mode" (XPM, the XP virtual machine) will run seamlessly from the Windows 7 desktop (however, those apps will be inside a VM and, therefore, files will not be visible in file manager). At least, that's how I understand this article. This technology, apparently, is currently available in Microsoft Enterprise Desktop Virtualization (MED-V), a corporate-level product.

The one thing missing from these reports is whether there are facilities to customize the XP VM and to what degree. The ability to customize a VM is important, for example, when it becomes necessary to reallocate/restrict the amount of memory a virtual environment uses so that you (the developer) can replicate a customer's environment. Microsoft has announced MED-V version 2, with Windows 7 support, to be available within 90 days of the general release of Window 7. Assuming MED-V offers customization of the XP VM, it still isn't an end-user product.

Of course, even if the XP VM is just another VM (but with the added benefit of running "legacy" apps transparently), it still uses Microsoft's Virtual PC product, a product not universally loved (yes, I know, this is a first for the folks from Redmond). And, finally, this technology is not available in Windows 2000, 98, 95 &.

So, it stills seems necessary to create custom VMs. VMware is the dominant tool in the virtualization market, though Sun's open source VirtualBox is also well reviewed. A number of members of the Clarion community report very good experiences with VirtualBox.

While VM Ware was introduced in 1999, virtualization actually has a much longer history. Virtualization goes back, at least, to the IBM M44 of the mid-1960's. It is the original solution for maximizing utilization of CPUs. Amit Singh provides a most interesting history of virtualization in An Introduction to Virtualization. I strongly recommend perusing this article.

The thing that puts me off about making VMs is the amount of work (again, see Mark Riffey's article, cited above). Start up VMware or VirtualBox, or the VM manager of your choice, select and install an operating system, register and configure the O/S. After *that* you get to reinstall your applications, move your data over, set up your desktop, etc. All in all, this could

be a day or more's work.

Cloning the OS

I already have a fully configured PC. Why can't I "just" clone my existing hard drive to a VM? Yes, there are things I might not want in a virtual machine but I could uninstall them later, couldn't I?

Terry Barrett, a colleague at Nebo Systems, cloned his PC by using Microsoft's Virtual PC. Virtual PC can create a VM from a Ghost backup. So, Terry Ghosted his drive and imported it into Virtual PC. But he found the performance of Virtual PC to be... lacking. So, he imported the VM into VMware Workstation (VirtualBox will also read and use Microsoft and VMware VM images). As there are 30 day evaluation editions of both Norton Ghost and VMware Workstation, this is a viable, if labor intensive, strategy.

Bill Helgeson (of ManageIQ, a virtualization management software company, and the person who has been running my Internet Connect and Web Builder sites) suggested looking at "p2v converters." Apparently, these tools claim to do just what I want, create a VM from my fully configured hard drive.

By googling, I found a couple of p2v converters. One is made by VMware, the VMware Converter Standalone (no, not "standalone converter" but "Converter Standalone"). Who, I thought, would know better how to create a virtual machine? A further recommendation for VMware's products is that, once I have a fully configured VM, I don't need VMware Workstation or VMware Server. VMware offers a free product, VMware Player, which provides a "run time environment" for running VMs. VMware Player runs a virtual machine in a desktop window (so I can carry the Player install and my VM files on a USB hard drive, install Player on any machine and run my personal PC environment; anywhere).

Googling for information on VMware's converter - of the Clarion folk I polled, only one had tried VMWare's converter and had no success - revealed two important pieces of information:

- "Hot" conversion is the preferred method (i.e., install the converter on the drive to be converted as opposed to converting a drive on a network - the converter can be uninstalled from the VM after creation)
- Suspend as many services as feasible (i.e., have as little running as possible)

I only suspended my anti-virus software.

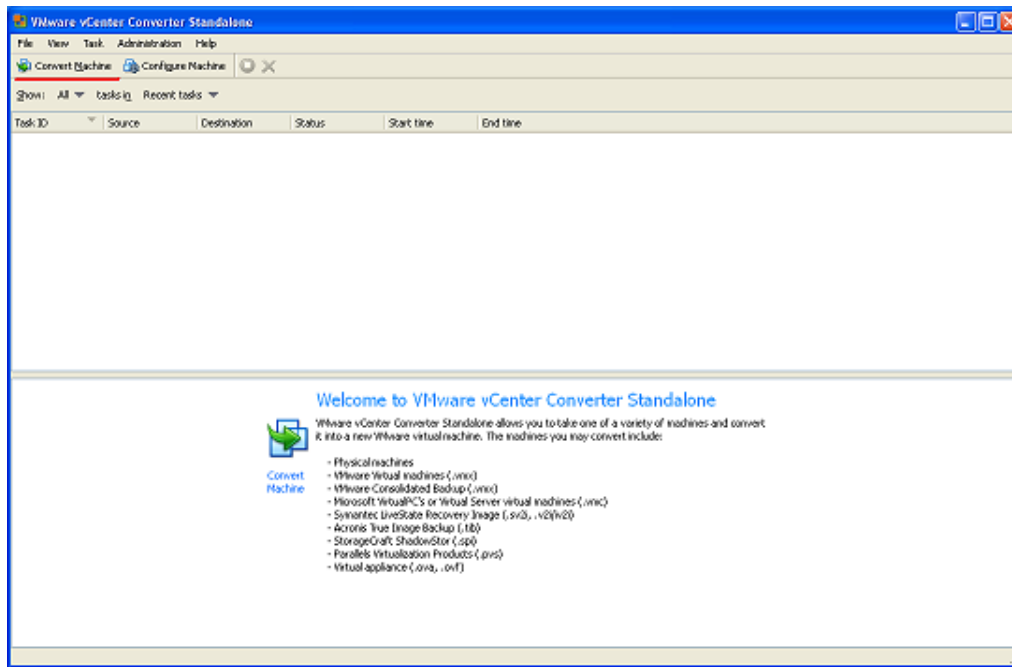To begin, start Converter Standalone and click "Convert Machine."

Figure 1. Converter Standalone's opening window (view full size image)

As I recall, the "Configure Machine" option lead me off into a set of options that made no contribution to creating a VM at all.
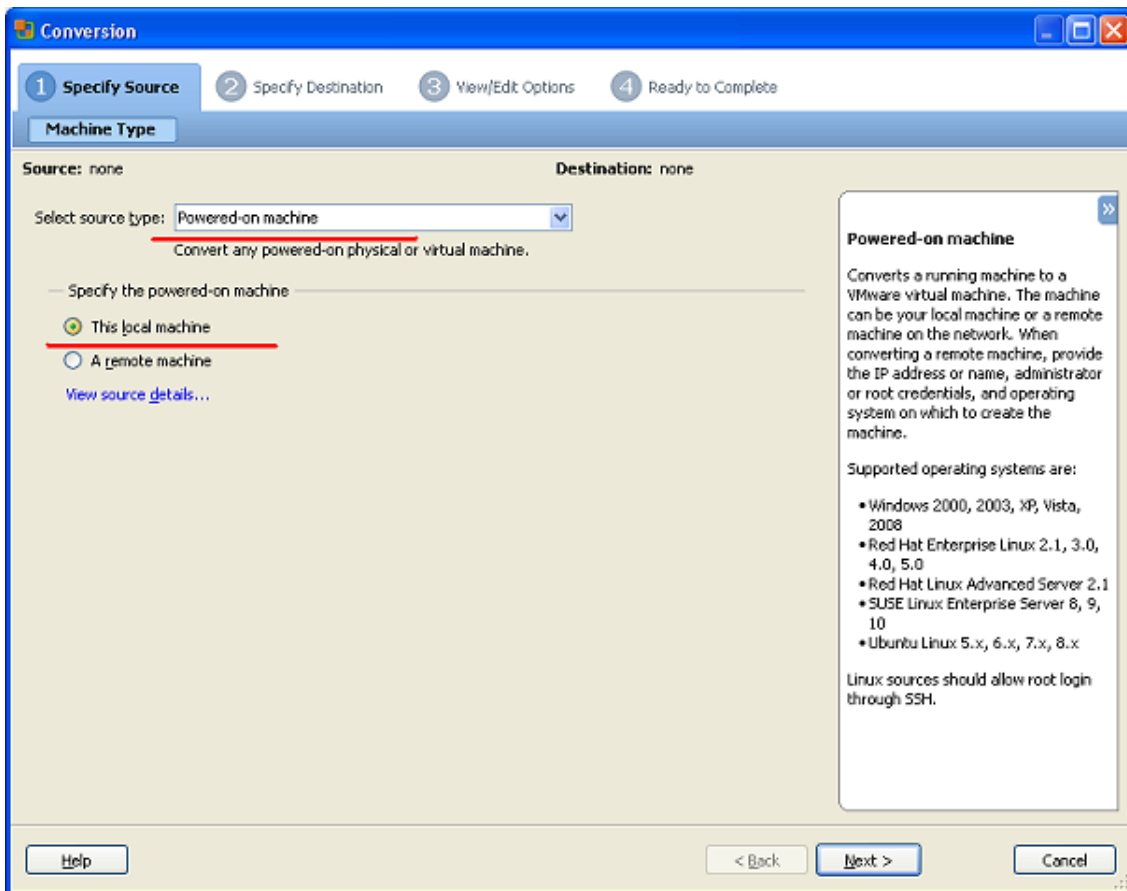
Next, select the "source:"

Figure 2. Select source (view full size image)

By default "A remote machine" may be selected. Change this to "This local machine."

"Destination type" is VMware. Here, you also name the VM and select a physical location where the new VM's files are to be written.
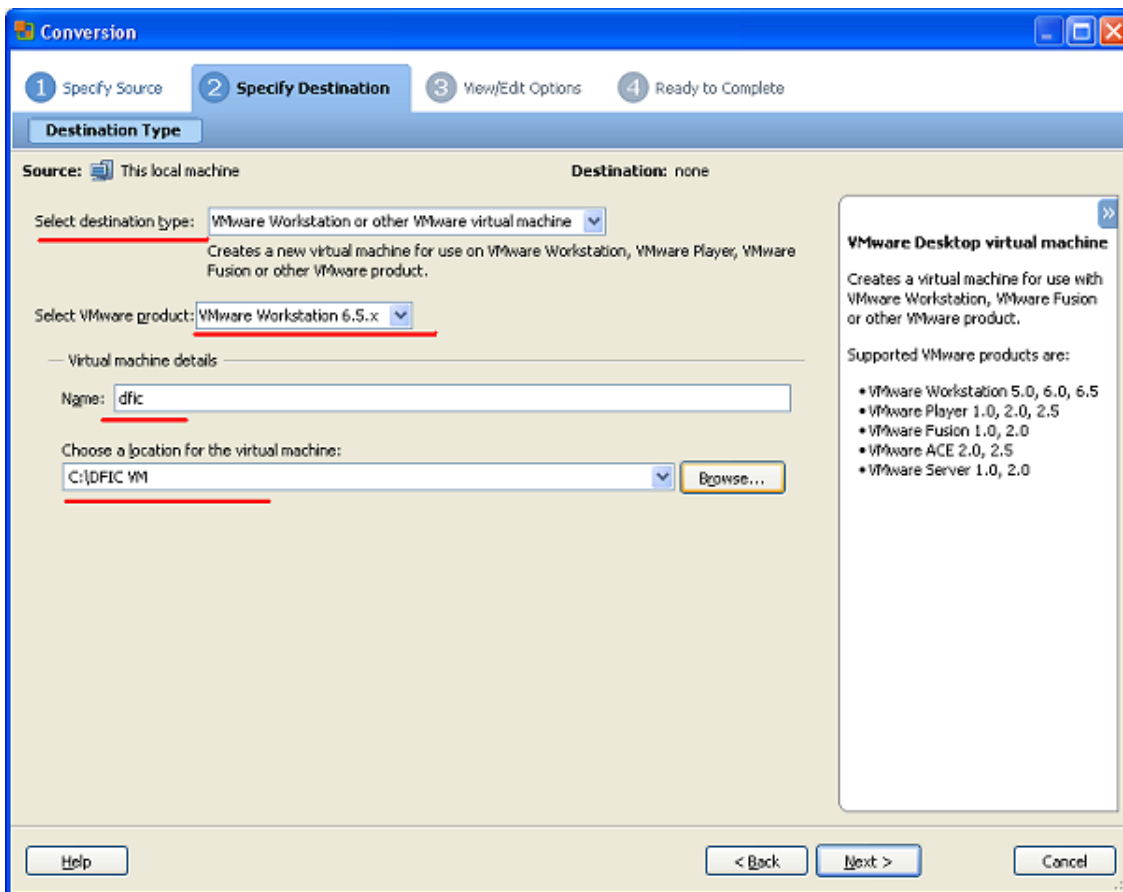

Figure 3. VM details (view full size image)

Make sure that there is sufficient space on the target drive for the files that Converter Standalone will create. If there is not sufficient space, Converter does so inform you. But, it only informs you as it begins to create the VM. In other words, you don't know about a problem until you've been all the way through the process.

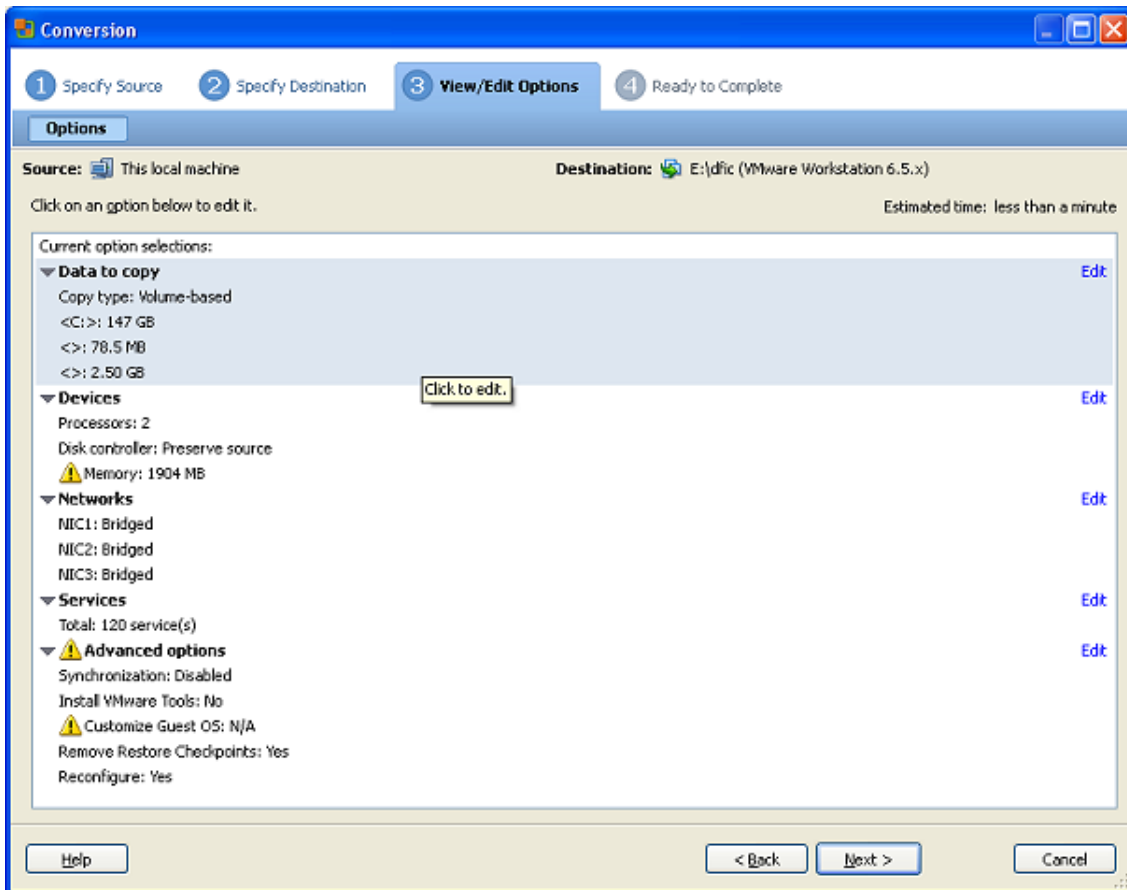The next screen is very important. Very.

Figure 4. VM Customization screen (view full size image)

This is where configuration options are set. Some of them, like volume size, cannot be changed once the VM is created.
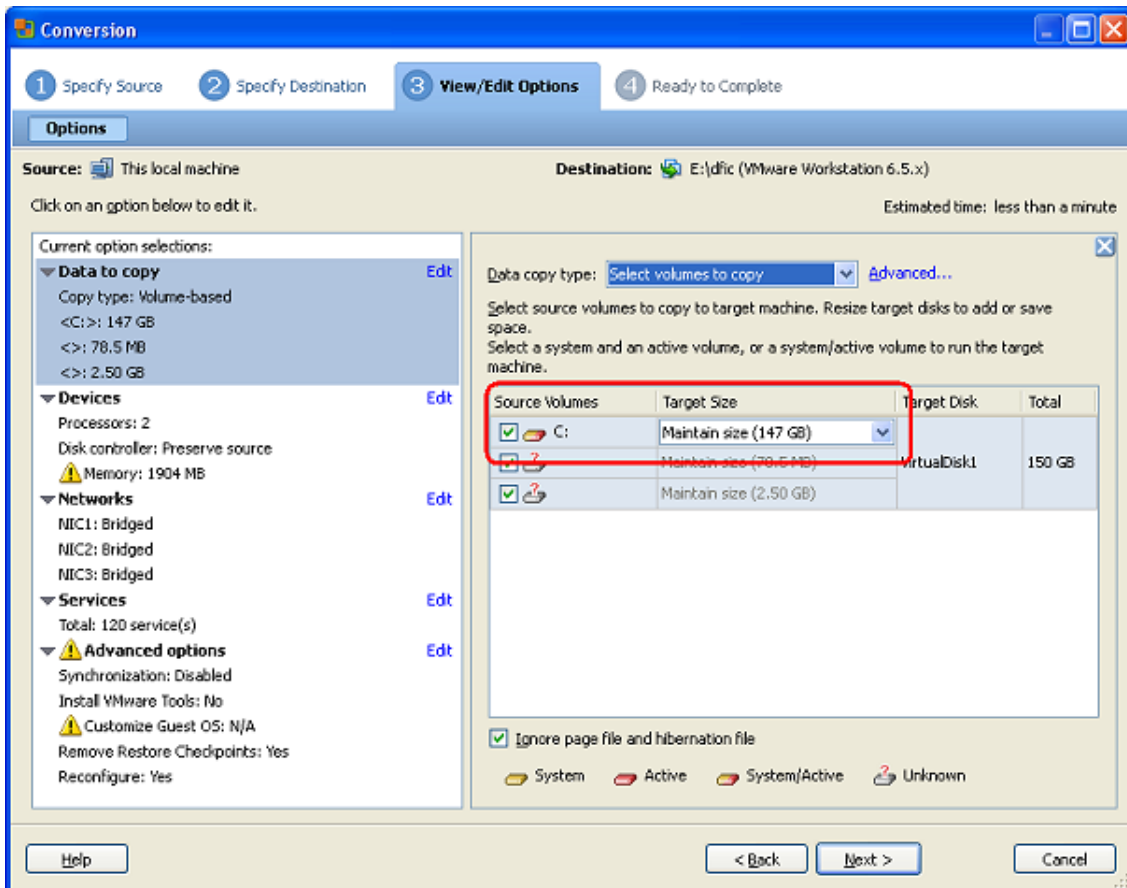
Figure 5. Setting volume size (view full size image)

By default, the volume size will be the (formatted) size of the source drive. Converter Standalone will not let you configure a size smaller than the space actually used on the source drive. Also, the default is not a fixed sized image but a disk image that can grow. The image (VM "disks" are stored as image files) will start out large enough to contain the data written to it by the conversion routine and can grow up to the size entered on this screen.

You can also configure the number of processors to use. This cannot be changed later. The amount of memory, which *can* be changed in VMware Player, is also set here.

Based on what I read, I left the Networks and Services options alone. The next important configuration is in "Advanced options:"
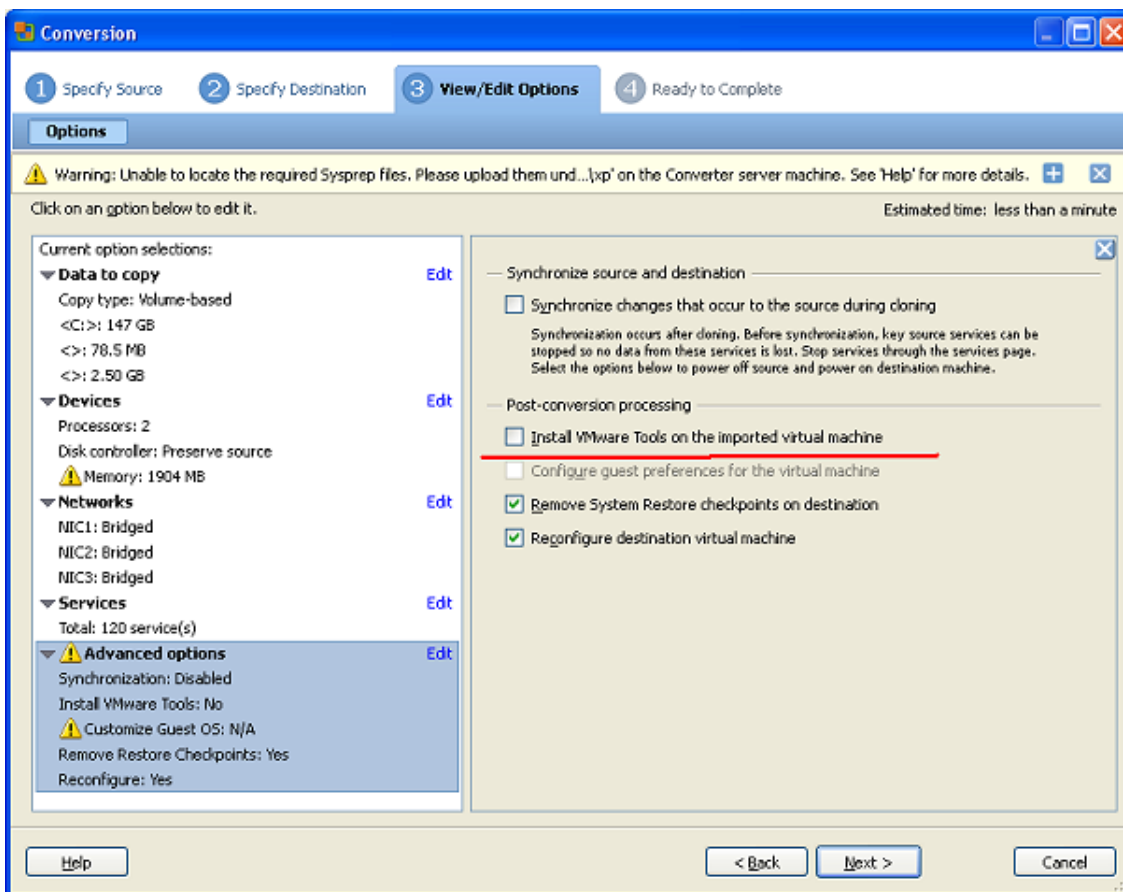
Figure 6. Advanced options (view full size image)

Select "Install VMware Tools." This is what allows communication with keyboards and mice. It also prevents you from having to reregister Windows each time you start the VM. I did find that I sometimes needed to reinstall VMware Tools from VMware Workstation.
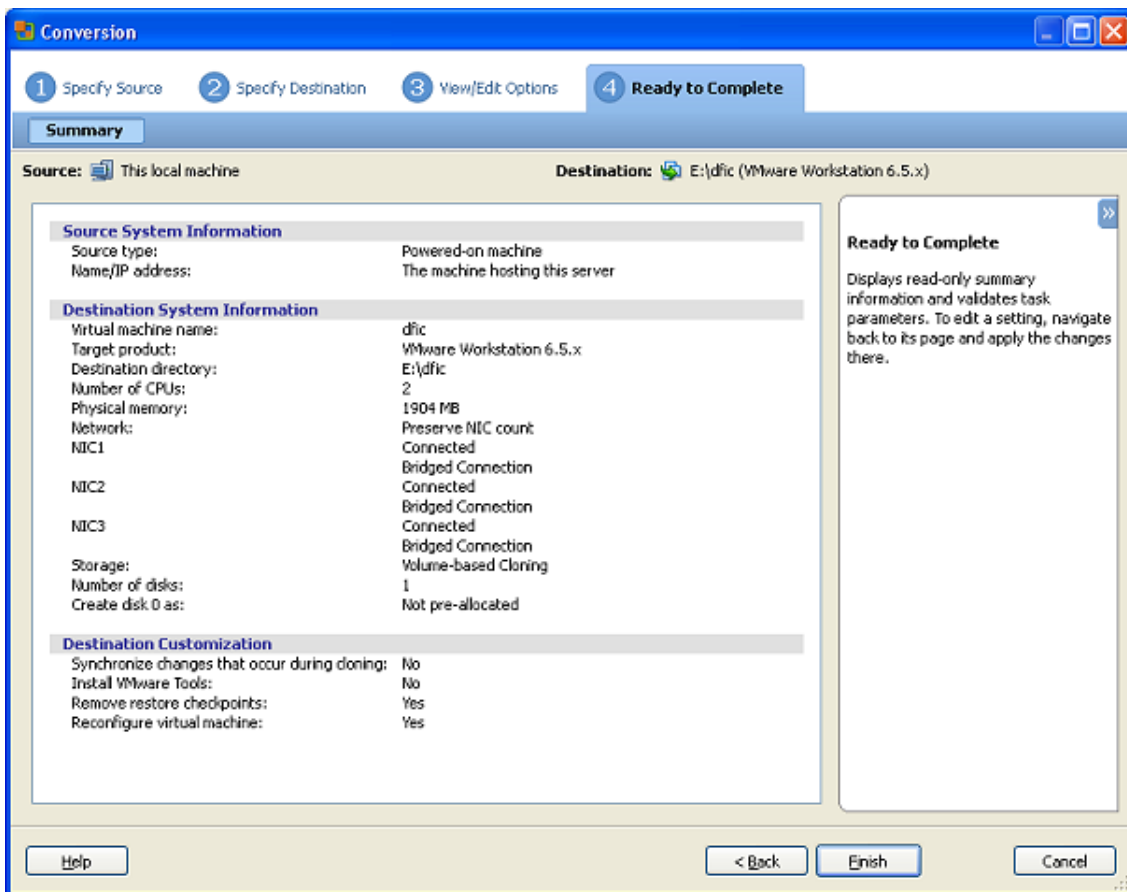
All done, now

Figure 7. Summary and "Ready to go" (view full size image)

Press "Finish" and go away. Have dinner, take a nap, read War and Peace. Converter Standalone will crank along for... quite a while.
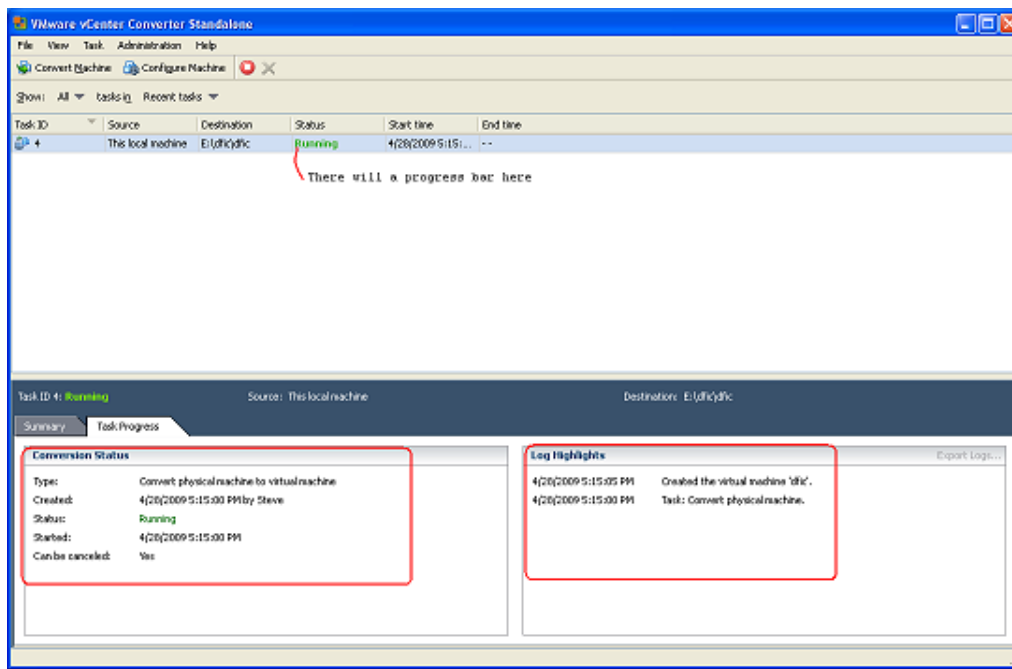

Figure 8. Converter status messages (view full size image)

On my 2 Ghz, 2 GB Core 2 Duo, a 140 meg disk (35 or so gig in use), Converter took almost three hours.
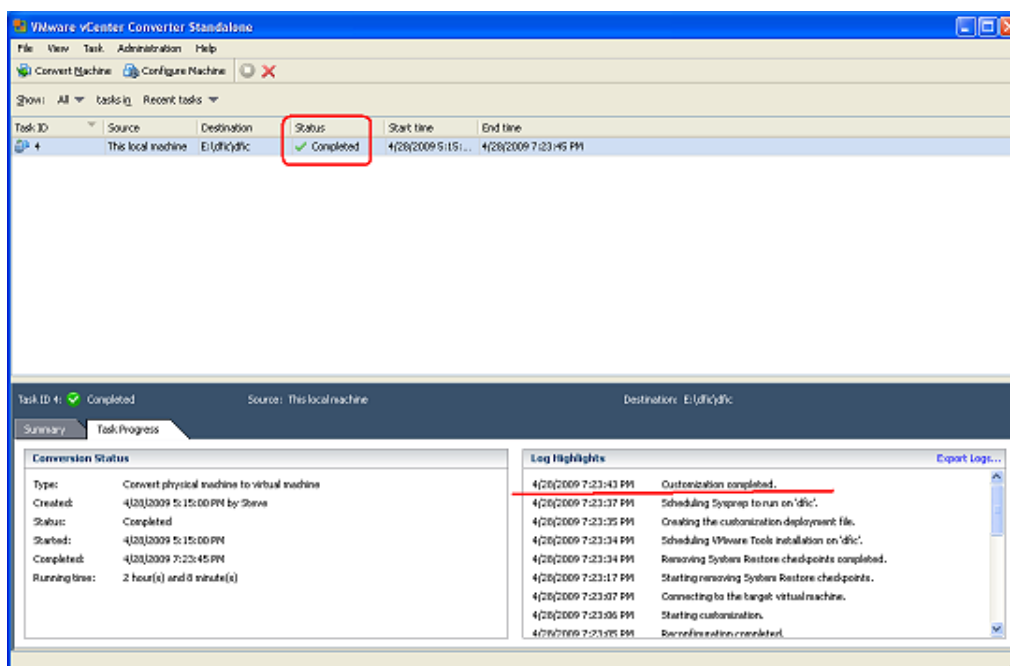
And, finally, all done.

Figure 9. Customization complete (view full size image**)**

Time to fire up VMware Workstation, Server or Player and see the VM in action.

Starting up VMware Player, I got an error that my VM could not connect to the floppy drive. This was interesting as the source PC doesn't have a floppy. Either Workstation or Player can be used to tell the VM not to connect to the device at start up.

I had to reregister Windows also. If I recall correctly, this is why, the first time I converted my notebook, I used Workstation to reinstall VM Tools. Note that it can take quite a while for the "Install VM Tools" button to appear when first opening the VM in Workstation. After that, my fully configured, precisely as I want it environment, right down to the wall paper, is up and running inside a portable virtual machine.

Summary

Virtualization is one of those things I consider a necessary evil. I work in Clarion 5.5 at work and run Vista Business 64. I have no choice. I work in 6.3 at home (a client refusing to move) and I want my environment to be entirely portable. I use a VM.

But, creating a VM fully configured with all my software, even the Clarion news groups, is mostly a matter of waiting. Oh yes, remember to uninstall Converter Standalone from the VM, you won't need it there again.

Resources

- Windows 7 gets virtual 'XP mode'
- Windows 7 Virtual Mea Culpa
- More on Windows 7's 'XP Mode'
- Five reasons you won't want Windows 7's XP Mode

Steve Parker started his professional life as a Philosopher but now tries to imitate a Clarion developer. He has been attempting to subdue Clarion since version 2007 (DOS, that is). He reports that, so far, Clarion is winning. Steve has been writing about Clarion since 1993.

Reader Comments

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Clarion Magazine

Clarion 7 Build 5615 Review

by Dave Harms

Published 2009-05-28

SoftVelocity released Clarion 7 Gold in the middle of April (2009) and proceeded to take some heavy flak over missing features and outright bugs. It's six weeks later and company has shipped build 5615 which addresses a number of key issues/bugs and adds some new functionality. There's been some positive response to the fixes and new features in this build, and also some concern over a new display bug and some unfixed older bugs.

A word about multiple Clarion 7 installs

Before I get into what's new with Clarion 7 (hereafter called C7) I thought I'd explain a little bit about my test environment. As of last month's gold release I've decided to keep multiple copies of C7 installed at the same time. This is a lot of hassle with C6 and earlier releases because the Clarion bin directory is stored in the system PATH variable. If you want to play that game with C6 I suggest you get Lee White's Clarion Version Switcher.

But C7 doesn't (by default) use the PATH at all; instead, there's an option in the project settings to copy referenced DLLs to the build directory, and this option is enabled by default. Consequently you can have as many different versions of C7 installed at one time as you like. All you need to do is specify a unique install directory; instead of using the default directory of Clarion7 I specify the full build number, e.g. Clarion7.0.5615.

The downside is that the installer isn't version-specific. If you install multiple versions of C7 you'll still only have one C7 program group under the Start menu, and one C7 entry in the Control Panel's list of programs. Uninstalling could be problematic, although you can *probably* just run the uninstaller in the Clarion directory, select that version's uninstall log file, and remove just that one version.

And since there's only one program group you'll also need to create your own version-specific shortcuts to Clarion.exe and place them in a suitable location. In Vista I commonly pin shortcuts to the Start menu. In Windows 7 I prefer to pin shortcuts to the taskbar so I always have an icon there even if the program isn't running. I can also drag taskbar items around to change their order, which is a good thing since all the versions of C7 by default have the same icon (you can, of course, specify the icon, but I'm not about to start creating new icons for each release).

Figure 1 shows a portion of my taskbar. The running apps are Windows Explorer, Microsoft OneNote, and PaintShopPro. The icon for C7 build 5300 is above OneNote, the icon for build 5615 is below OneNote (the button that says "SQL Queries"). And yes, I do keep my taskbar on the right side of the monitor (of the right-most monitor, actually).

Figure 1. The Windows 7 taskbar, docked on right side of monitor, with two C7 installations.

I've given the shortcuts names that reflect the version number, and if I hover the mouse over the icon I will eventually see the actual shortcut name. To make it a little harder to click the wrong icon I've separated the two versions with another taskbar item (OneNote, in this case).

I don't see myself eventually cluttering up the taskbar with numerous builds of C7, but I do find this a useful way to compare the current build with the previous build. You may also find this approach useful; not all builds are of equal quality, and as the C7 future unfolds you may want to keep multiple builds on hand so you can backtrack as needed. Another approach, of course, is to keep each build in its own OS by way of virtual machines.

New features

The toolbar buttons have changed subtly in 5615. Figure 2 shows the toolbar for build 5300 (the gold release). The two buttons that have been removed (or at least moved to another location...) are Generate Open and Generate All applications. Please note that I've truncated the unchanged right-hand part of the menu bar.

Figure 2. Icons removed from the toolbar (APP is open)

You can still generate multiple apps at once but you now do so from the Applications Pad (which I'll get to in a moment).

There are two additions to the toolbar, as shown in Figure 3. The first is the Add Existing File to Selected Project or Solution button. The hotkey is Ctrl-Shift-+ (the tooltip erroneously lists the shortcut as Ctrl-A). The second addition is the Generate, Make and Run button. In a multi-project solution the latter button runs whichever project is set as the startup project (and that option is available by right-clicking on the project in the Solution Explorer).

Figure 3. Icons added to the toolbar (APP is open)

The Application Pad

The Application Pad toolbar has a new layout as well. The previous release had two drop-down buttons, one for generating (the lightning bolt) and another for running, with the option to generate and make first (the green play button with the tiny lightning bolt. This build adds a Generate/Build button (Figure 4).
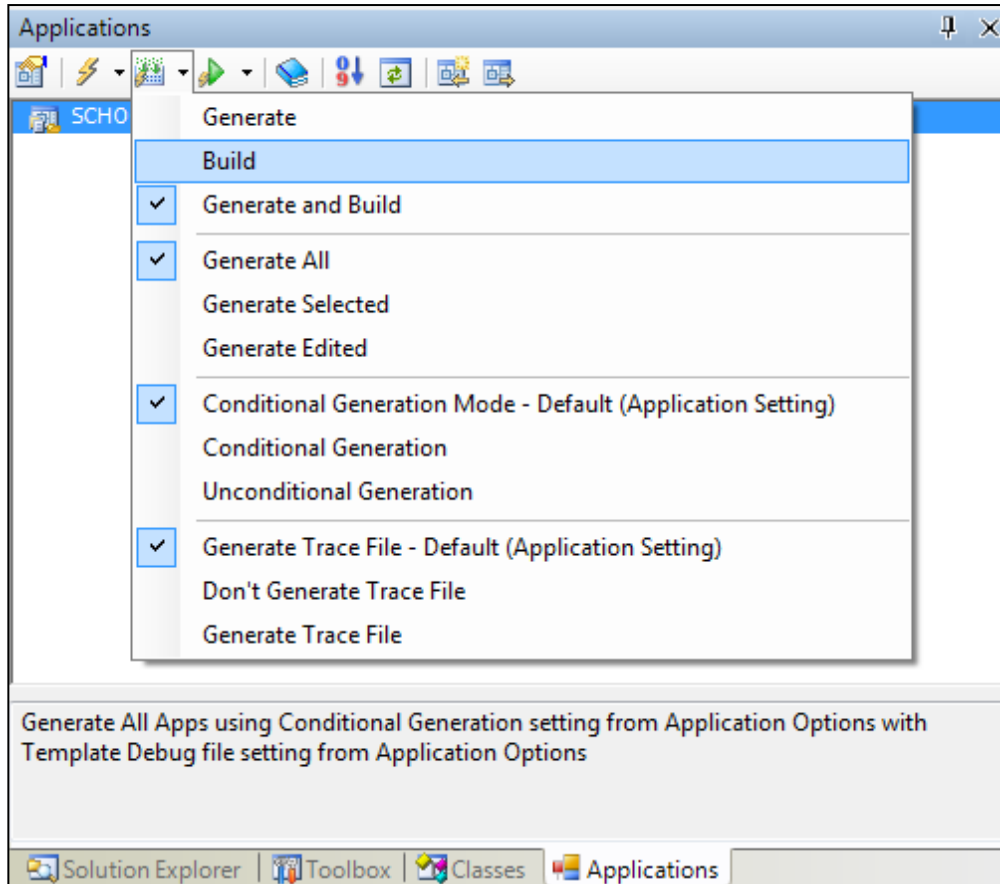

Figure 4. The Generate/Build button

Circular dependencies dealt with

There's overlap between the Generate/Build and the Generate and Generate/Run buttons; the important point is that this button enables you to build a multi-APP solution even if you have circular dependencies. That is, the build will not stop if one APP encounters an error. The idea is that if you have circular dependencies you can use this button to repeatedly build your solution until all APPs successfully compile. Just be sure you've selected the Generate and Build option.

A build process that continues in the face of errors removes the need for the MSBuild workarounds I described in Handling Circular References in Clarion 7. That's a good thing. But a few developers have pointed out that there is no way to cancel a build; this could certainly be an issue if you're building really large solutions and you *want* to interrupt the

process for any reason.

But *why* is there an Application Pad?

You may be wondering why there is an Application Pad in the first place. Don't all of the APP-related functions belong in the Solution Explorer?

Although having application-related data in two places is potentially confusing, I've never thought the Solution Explorer was a particularly good fit for Clarion APP files, primarily because it contains a lot of information not relevant to most APP development.

Think for a moment about the purpose of solution files, from an MSBuild perspective. A solution contains all the information MSBuild needs to build a particular application, made up of one or more projects. That information consists of source files, libraries, and other resources. Solution files do not have an obvious place where you can plug in an APP file and a code generation system. And yet if you want to have a single file that describes one or more APP files *and* all the generated source, a solution file is the logical, um, solution. A C7 solution file (which incidentally is *not* an XML file) for a single APP contains two project entries. Here's an example from the SCHOOL solution (with line breaks added):

```
Project("{12B76EC0-1D7B-4FA7-A7D0-C524288B48A1}") = ↵
    "SCHOOL", "SCHOOL.cwproj", ↵
    "{C64341F1-Clarion 704-43F7-8839-C1B60B9C0608}"
EndProject
Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = ↵
    "Solution Items", "Solution Items", ↵
    "{{2150E333-8FDC-42A3-9474-1A3956D46DE8}}"
  ProjectSection(SolutionItems) = postProject
    SCHOOL.APP = SCHOOL.APP
  EndProjectSection
EndProject
```

There's a Project entry that points to the SCHOOL.cwproj project file, which contains all the information needed to build the project. But there's also a Project entry that doesn't point to a project file at all, but to the APP file. And the APP file shows up in the solution explorer as a result, and you can open it if you wish.

But really manipulating APP files isn't what the Solution Explorer is all about. There's all that extraneous non-APP information, like source files just asking to be clicked on, edited, and then overwritten on the next generation cycle.

The Application Pad does away with all the non-APP information, resulting in a cleaner interface. And yes, SoftVelocity has said that the Application Pad is the preferred way to interact with your APP files.

Container control fix

One of the biggest issues in the original gold release was the failure of the Window Designer to duplicate the quirky container behavior found in Clarion 6 and all earlier versions. Clarion's tabs are not OS tab controls; if you have a control that is declared inside a TAB structure but which is located outside the bounds of the tab, the control will be visible whenever the tab is visible. In build 5300 C7's window designer evidently employed standard OS tabs, and like all

"normal" container controls these tabs do not display anything that's outside the bounds of the tab. This mismatch between the designer and the RTL had the potential to cause havoc, particularly on browses where list boxes might inadvertently be moved into a tab at design time and then disappear from view at runtime whenever that tab was not selected.

The Window Designer in build 5615 restores Clarion's oddball tab behavior, and you will be asked as appropriate if you want to move a control into or out of a container.

Other changes

Another important fix for large solutions is the generation message output. Previously this went to a series of popup windows, as in previous versions of Clarion. But in C7 you could be running a very long multi-APP generation process, and every time one of those messages pops up it grabs the focus, so you can't work in any other application until code generation is complete. With this build all generation output now goes to the output pad.

There's a new standard layout option called Application (Figure 5). This layout unpins the various pads leaving the maximum amount of real estate for the application itself.
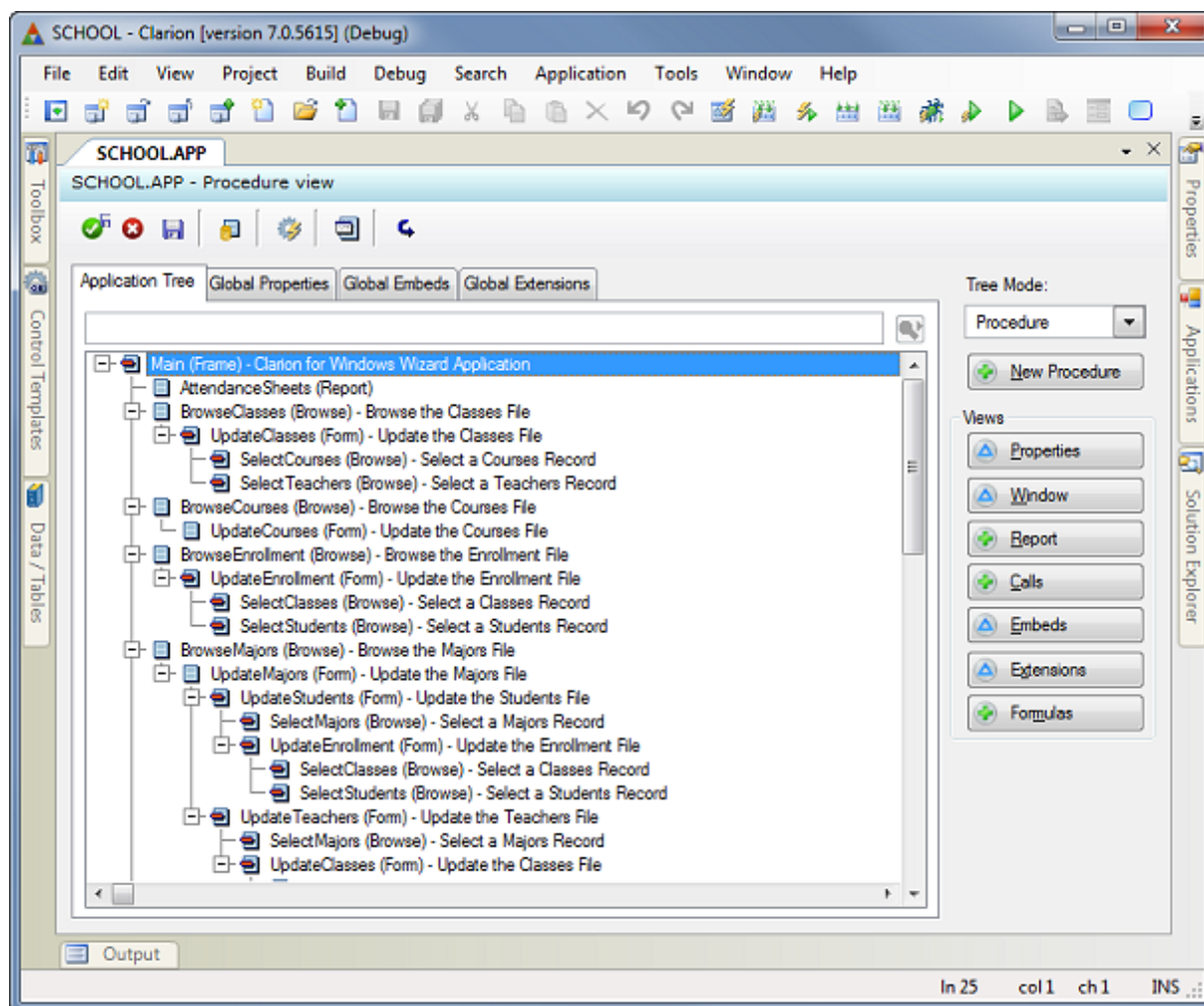

Figure 5. The default Application layout

If you have a smaller display (as on a laptop) this could be useful; many developers, I think, will want to pin some or all of the pads anyway.

There's been some complaining about the lack of code completion and code folding in embed points. Those features are

found in the embeditor, and the reason they're not in regular embed points has to do with code generation. When you open the embeditor the template code to generate the procedure is called; the output from code generation is presented to you. In an embed point that doesn't happen, and without the code generation you're not going to have the information you need for full-fledged code completion. SV's objection to code completion in embed points was that this would invoke the overhead of code generation, which might be a problem for some folks.

In build 5615 there two changes to the Embed Editor tab under Tools | Application Options (Figure 6). The Edit errors in context entry now adds the words "(using Embeditor)", clarifying that if this option is checked and you get a compile error, you'll be taken to that error via the Embeditor. Actually that presupposes that you have *not* checked the Edit embedded source errors in generated code option on the Application tab. And it's not often you'd want to do that, since generated source is overwritten on the next generation cycle.
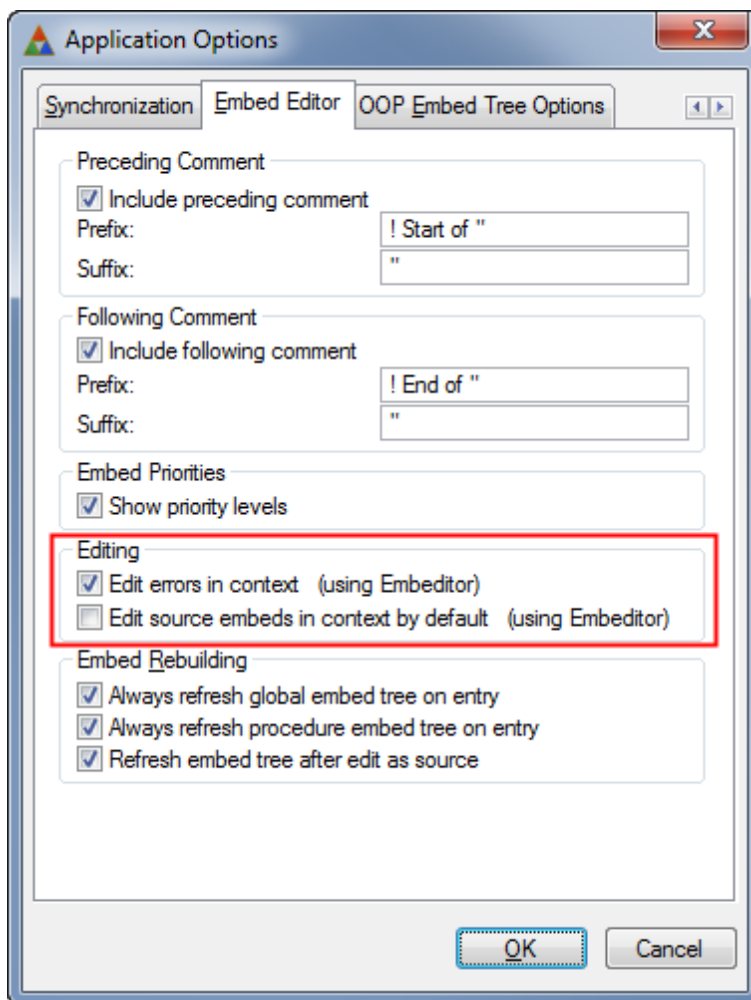

Figure 6. New embed editing options

The new item is called Edit source embeds in context by default (using Embeditor). If that option is not checked then embeds work as before: when you open an embed point you get a simple text editor with no code folding or code completion. Set the option on, however, and when you open an embed point you are instead taken to that embed point *inside the embeditor*. Now you have code folding and code completion, and of course you can jump around to other embed points if you wish. The penalty is that the procedure must be generated each time you enter an embed point; on a fast machine that may not be a problem.

This option does not work for module or global embeds, however; those are only editable using the simple text editor.

One other point. In Vista with Aero the tab scroll buttons are pretty small - it's easy to miss the fact that there are more tabs to the right. My thanks to Lee White for pointing this out.

Code completion and code folding has been extended to include files with the extensions .inc, .int, .trn and .equ.

You can now select multiple items in the Tab Order Assistant.

Another new feature is described as "the solution configuration (Release/Debug) now is selected from the first app loaded into the solution when it is created." I assume that also applies to importing a multi-DLL application into C7, but I haven't tested it.

Under Application Options, the Cache Applications In-Memory after Editing option now defaults to off. That means that the IDE will reload the APP from disk each time you open it and any changed templates will be re-registered (assuming you're using that option, which defaults to on). In other words, if you want the benefit of application caching you now have to explicitly choose it.

The Enforce Clarion# name restrictions option for the DCT editor now defaults to off for C7 and on for Clarion.NET. The only time you'd want to set this to on for C7 would be to prepare your dictionary for .NET compatibility.

The DCT format has changed, so whenever you open a dictionary from a previous C7 release you'll be notified of the conversion.

There were no changes to RTL exports so you won't need to recompile any third party DLLs.

Bugs and fixes

There are some 74 bug fixes in this build. You can get the full list here. The PTSS system shows in excess of 200 viewable, confirmed old bugs, some originally entered as far back as early 2007. All but ten of these have been updated as of this year.

There are a dozen or so new confirmed reports for 5615 (as of this writing). Among these are a problem with the display of selected text (Figure 7).
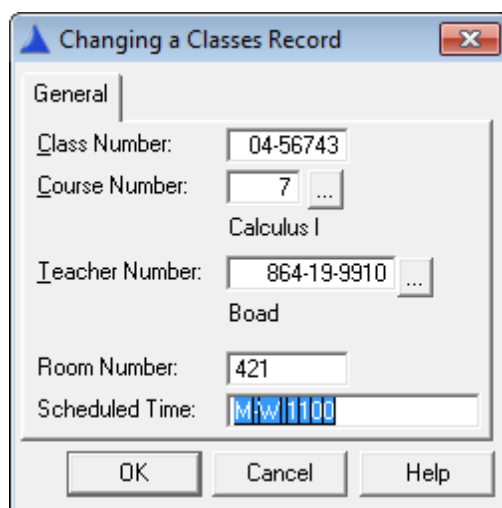

Figure 7. Problems with display of selected text

There are several ways to induce this bug, which appears on Vista or Windows 7 using Aero, but not in Windows Classic mode. You can double-click on a string or click and drag to highlight a string, and you'll see vertical lines

and underlines for each highlighted character. Drag to the far right of an entry field and the vertical lines disappear.

There was a bit of a furor over this one as it dramatically impacts the appearance (though not the functionality) of programs; the bug was fixed on Saturday and an update will be provided.

There are some other issues with data entry, however. There's a long-standing problem with the MASK attribute and @N and @D pictures, where the picture displays with too many zeroes and data is cleared as soon as you tab off the field. And there's an issue with capitalization. If you use the CAP attribute on an entry field the capitalization is too aggressive. For instance, o'reilly becomes O'Reilly, but o'reilly's becomes O'Reilly'S. The CAP bug was reported for 5615 but is present in 5300 as well.

Another newly reported bug involves dragging control templates onto tabs on a FORM procedure. The controls don't populate, but there is are two workarounds. According to Maarten Veenstra, you have to drag the control template to the window and *then* to the tab. Anthony Robinson points out that if you turn off the C6 designer compatibility mode (under Tools | Options | Window Structure Designer) then dragging/dropping templates does work. This one should be an easy fix.

Menu displays remain a hot topic. A thread on that subject in the new sv.clarion.clarion7 newsgroup generated a massive response. Lee White has put together an excellent screen grab to illustrate the problems, and with his permission I've reproduced it here (Figure 8).
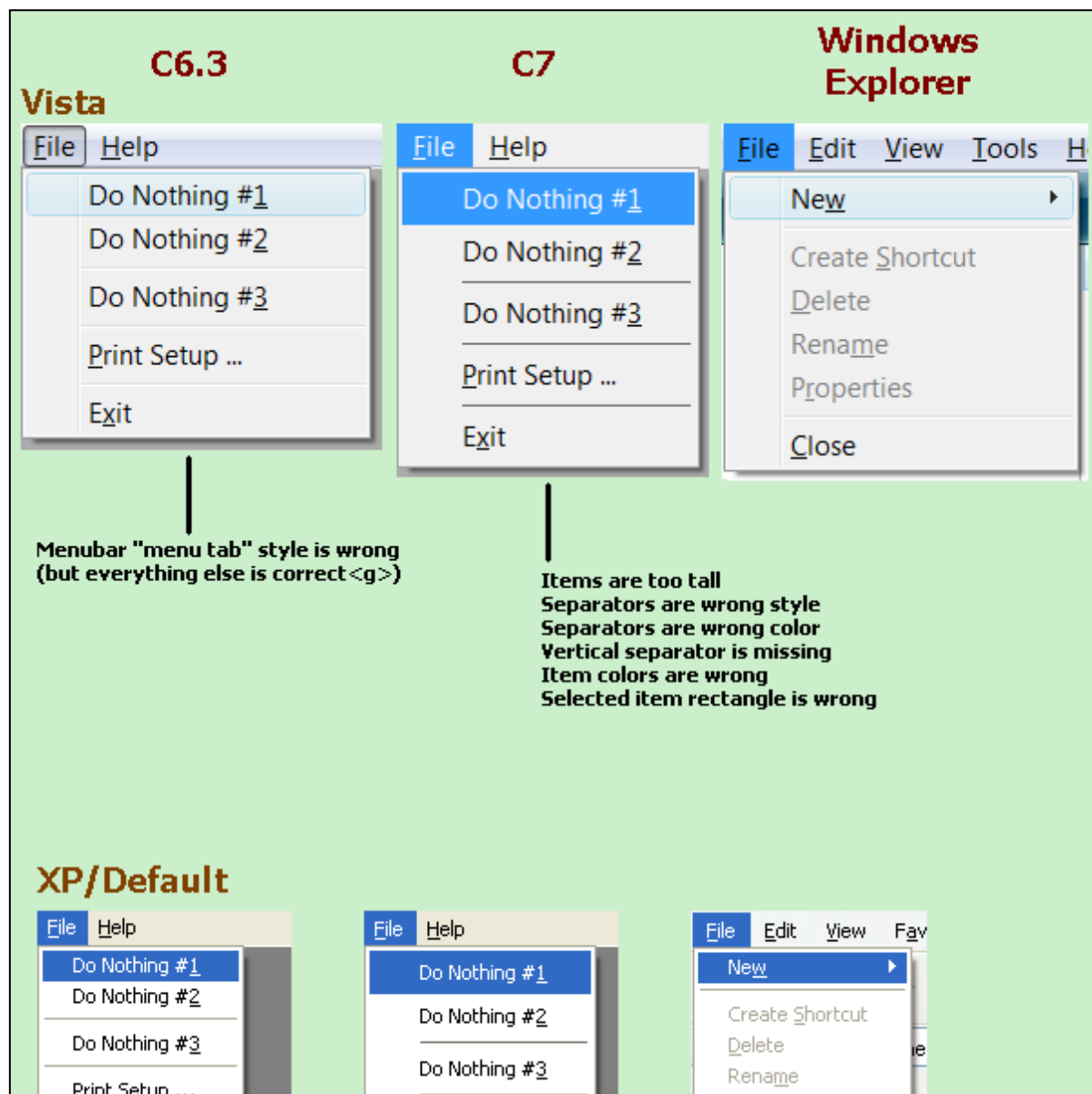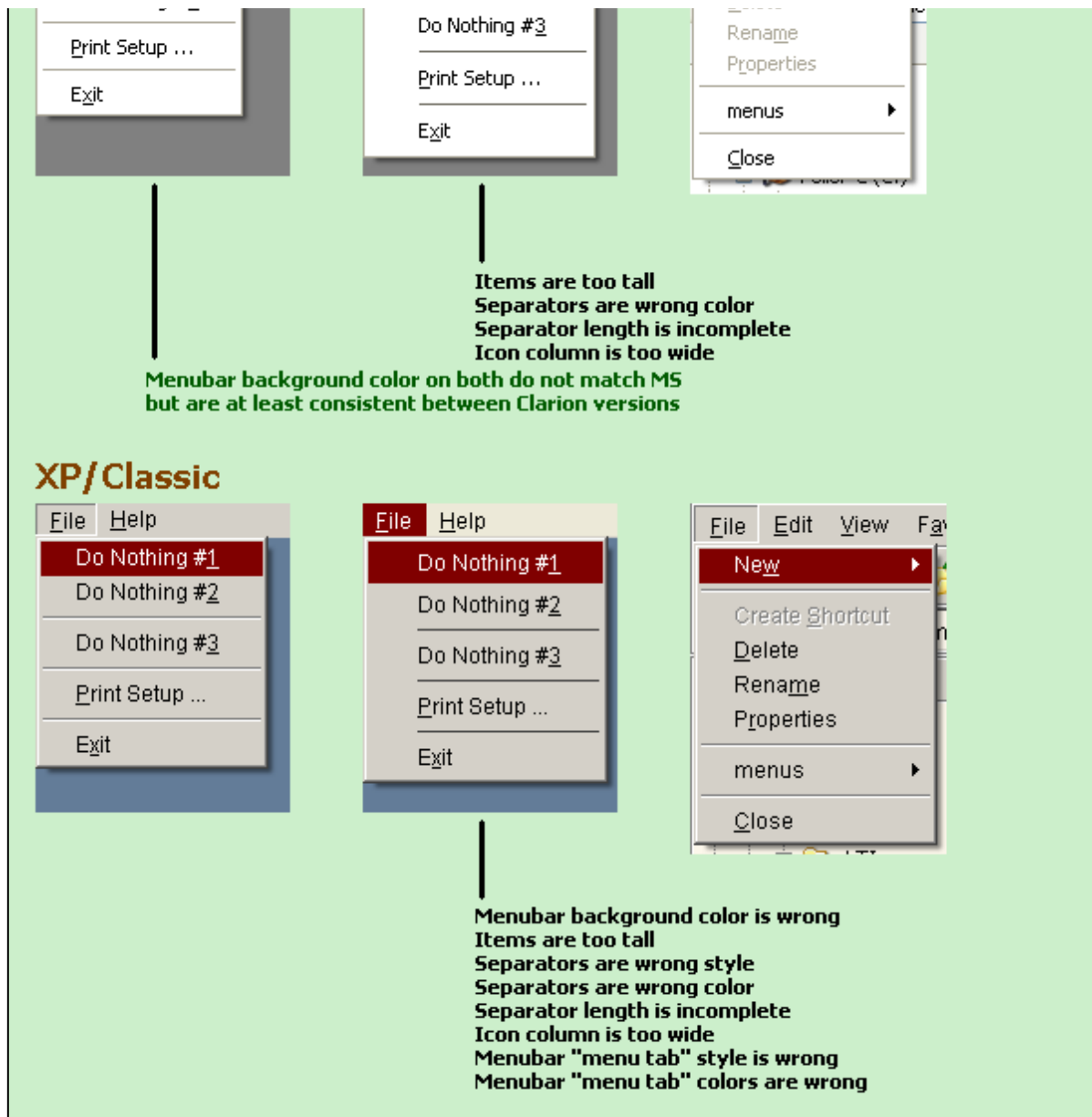
Figure 8. Menu differences in C6/7.

Lee also provided examples of menus in IE but I had to trim them to save space. To see the original image click here.

According to Lee's screen shots menus have taken a step back in C7.

Bob Zaunere pointed out (or at least implied) that Clarion menus are owner-drawn, not OS menus. In repsonse, Phil Carroll pointed out an MSDN article on menus and opined that owner-draw is required to place images on XP menus, but not on Vista and Windows 7.

Another problem with menus in C7 is that disabled menu items do not use the specified menu font, and generally look pretty ugly.

Here's another tip from Lee: if you're compiling as Lib (local compile) and using the cwHH templates for HTML help you'll need to make a slight change in the shipping templates. Search in cwHH.TPW and cwHHABC.TPW. Locate:

```
INCLUDE('cwHHL.INC'),ONCE
```

Change to:

```
INCLUDE('cwHH.INC'),ONCE
```

New newsgroup

The beta newsgroups have now been superceded by a new sv.clarion.clarion7 newsgroup (via the news server at discuss.softvelocity.com). The beta newsgroups remain online but are no longer used.

The procedure list

It appears quite a few developers like to work with the AppGen's procedure tree in Modified order, so the most recently modified procedures are at the top of the list. In C6 just opening a procedure and closing it results in an updated "last modified" date. In C7 you actually have to make some sort of change, even if it's as minor as adding a space to the end of the procedure description.

Topscan

The version of Topscan that ships with C7 is actually the C6 version. This leaves open the question of whether Topscan supports the advanced encryption support for TPS files apparently included with C7.

The disappearing APP

A number of users (of which I'm one) have experienced the disappearing APP phenomenon, where the APP is loaded but the APP window is blank. There's no way to close the APP, and no way to close the IDE without closing the APP, so you have to kill the IDE from Task Manager.

All of which, to my mind, begs the decade-old question of why we have to explicitly close an APP in a separate operation from closing the IDE....

Addins and accessories

There's been a lot of discussion on how to go about adding various tools and third party accessories to the new IDE. Brahn Partridge, Phil Carroll, Lee White and Charles Edmonds (if I've missed anyone please let me know) have all contributed valuable information, and many others have added to the discussion. The upshot is that there are ways to add accessories to the IDE, via addins, and I'll have more information on that subject in a future article.

Summary

SoftVelocity continues to make progress with C7. The restoration of C6-style container handling is immensely important, and those developers with very large multi-DLL apps will benefit from the Application Pad's ability to handle circular references.

There are several critical bugs in C7 build 5615. The selected text display problem (reportedly fixed) is the most obvious of these as it lends any application with entry fields a buggy appearance. The MASK and CAP bugs could conceivably be worked around, leaving aside the question of *whether* workarounds should be necessary (for the CAP issue have a look

at Mike Hanson's Formatting Names Using Proper Case). Menus really ought to be modernized, although their irregular appearance is unlikely to stop most developers from shipping code.

Keyboard support is still somewhat lacking, although it's getting better. And some operations still take longer in C7 than in C6 (while the reverse is also often true).

Barring major regressions C7 looks to be a release or two away from being usable for a significant percentage of Clarion users. Not bug-free, but usable.

David Harms is an independent software developer and the editor and publisher of Clarion Magazine. He is also co-author with Ross Santos of *Developing Clarion for Windows Applications*, published by SAMS (1995), and has written or co-written several Java books. David is a member of the American Society of Journalists and Authors (ASJA).

Reader Comments

Posted on Thursday, May 28, 2009 by Lee White

"Keyboard support... it's getting better." Indeed! SV is working on it... as an example after badgering them for a while<g> they added support for ENTER to open the properties pad for a control when in the designer. Just select the control as you always would and press ENTER. F4 is still usable but ENTER is BETTER!

....

Posted on Thursday, May 28, 2009 by Kevin Dohren

Clarion 7 Build 5165 Review

I'm sure you've realised by now the error in the title (and a couple of places elsewhere) may cause problems if people search for the article in future.

....

Posted on Thursday, May 28, 2009 by Dave Harms

Dyslexics Untie!

Thanks Kevin. All fixed up. I hope.

Dave

....

Posted on Thursday, May 28, 2009 by douglas johnson

Nice review and run down of the changes. Unexpectedly, you've convinced me more that SV is headed in the wrong direction with the App Pad. Better to drop it and focus the enhancements on the Solution Pad.

....

Posted on Friday, May 29, 2009 by Dave Harms

Doug,

Interesting. If everything is moved to the Solution Explorer, what do you think should be done with the display of source files and all the other project data? They could hide it by default, I suppose.

I think the strongest argument for moving everything to the Solution Explorer has to do with automating code generation, something you can do in C6 but not in C7. Once there's a way to trigger that from the command line there's no reason you can't create an MSBuild task to do the same, and at that point it makes bales of sense to have the code generation in the solution explorer, which after all is just a pretty interface on top of the .sln file.

Dave

....

Posted on Friday, May 29, 2009 by douglas johnson

Dave,

>Interesting. If everything is moved to the Solution

>Explorer, what do you think should be done with the display

>of source files and all the other project data?

Of course, I know nothing about the details of getting items displayed in Solution Explorer. However, I can envision it as a clearly organized tree with user options to hide/display nodes. Rather than protecting users from details, SV should logically organize/present the project data.

Already, for instance, we see Apps beneath Solution Items and a double click will open the file. What more does the App Pad add other than various button actions? If those actions were included in Solution Explorer for the listed Apps, can the App Pad go away?

I would love to see this more widely discussed. I honestly believe SV and every one would benefit by the simplification.

Add a comment

Clarion Magazine

Windows 7, Virtual Machines, and Backup Lessons Learned

by Dave Harms

Published 2009-05-29

I bit the bullet this week and installed Windows 7 (hereafter called Win7) on my primary development machine. I did so only a couple of weeks after paving over a Vista 32 installation in favor of Vista 64.

I really didn't expect to go to Windows 7 until at least the fall. But I ran into some problems with Vista 64, Visual Studio 2008 and SQL Server Express 2005 (which ships with VS 2008 Standard, at least the version I have). As near as I can tell, somehow the Server Express '05 install messed up the .NET Framework 2.0. But maybe it was something else. Maybe I did it to myself. In any case it's all a blur now. I followed a variety of well-meaning instructions gleaned from the mighty web to try to fix the problem, with the result that my .NET 2.0 installation got completely hosed and even C7 refused to run.

It's a long, painful story, and given that my best backup of that system would at most have saved me a day's work, and since I had a Win7 upgrade looming, I decided to take a chance on the publicly-available release candidate. I also looked on this as a time to refine my disaster-recovery procedures.

I burned a DVD of the Win7 release candidate ISO and got to work.

The Windows 7 install

I was very impressed with the Windows 7 RC1 install process. Although there were some long periods of waiting at the beginning (during which the only indication I had of progress was the activity light on my DVD drive) the entire install went off without a hitch, and without my needing to supply any drivers. When Win7 booted up after the install process completed, not only did I have a working network but the display was spread across my two monitors, both of which were already at full resolution. By comparison, Vista 64 couldn't get my network running on its own (I needed to install the drivers from my motherboard support disc) and I had to install a video driver to get my displays to work properly.

But as smooth as the install itself went, I still took the time to plan out my strategy. In fact, I have a well-defined process for setting up a new Windows machine.

There are three sets of information that I find critical to any clean Windows install:

1. A tasks list detailing the steps needed to complete the install
2. All software needed
3. All software registration details needed

1) I keep the install task list in a Microsoft OneNote document. This is a living document, subject to revision. It includes preparatory tasks such as ensuring I have made the necessary backups, creating a virtual machine of the existing operating system, unregistering certain applications (like most of the Adobe products I own), etc. As I was replacing a Vista 64 installation that was just weeks old I decided not to create a virtual machine; I do however have a virtual machine

of the previous Vista 32 installation and I've found it very helpful to be able to load up my old OS from time to time to check a setting or run some program I haven't yet installed on the new system. You can read more about virtual machines here.

2) I have a directory on my hard drive called Installs where I keep all the software I need. Mostly this directory contains ZIP and EXE files, but it also has some subdirectories containing install sets. Additionally I have a directory for ISO images of those applications for which I have CDs or DVDs, or which I received as ISOs. Some older apps only install from CD, and if I have the ISO but lose the CD/DVD I can always create a new disc.

For several years I've used Undisker for CD ISO management, but as far as I know Undisker doesn't support DVDs. After looking around a little I discovered ImgBurn. So far I've only used it to create the Win7 DVD disk from the downloaded ISO, but it worked just fine. ImgBurn can make ISOs from discs as well, so I may have found a replacement for Undisker.

3) I keep my list of registration details in an encrypted OneNote document. Inevitably I stop using some programs, so when I do a complete Windows install I go through the list and bump all the currently used registration entries up to the top. (I also go through a similar process with my install software directory, moving no-longer used items to an archive subdirectory)

Partition decisions

Having to do two complete reinstalls in the space of a couple of weeks prompted me to rethink disk partitioning. Back in the bad old days, when six months of steady use was enough to bring Windows to its knees, I was in the habit of reinstalling the operating system on a regular basis. Consequently I was also in the habit of using the C drive only for Windows and putting all my data on other drives. And then Windows got better, and I found I could get along without reinstalling for 18-24 months. I also got annoyed with giving up unused space to Windows, and I started just keeping everything on the C drive again.

I had everything on my C drive for Vista 32, and I went to the same approach for Vista 64. Only now I had a whole lot more data than I did when Vista first came out, nearly half a terabyte in fact. And it was a pain copying all that data around. So when I realized it was time to kill off my Vista 64 installation I also decided it was time I went back to my old ways.

The machine in question has two one terabyte drives in a RAID 1 (mirror) configuration, for a total of one terabyte of usable space. (As an aside I like RAID 1 a lot, simply for the redundancy - although I have read that with some hardware you can get better read performance as well.) I set aside a 100GB partition for Windows, leaving 900GB for data. A hundred gigs may seem like a lot for Windows, but of course that partition (my C drive) also contains nearly all the programs I run (though not their data). I have approximately 35 applications in my "must install" list, and by the time they're all set up I've used up about 40GB on my C drive.

Separating application (and other) data from Windows has benefits for reinstalling, but also for backup strategies. Some years ago I gave up on tape and optical media and started doing onsite and offsite backups to hard drives. I have occasionally needed to go to a backup drive for some files I accidentally deleted, and having an actual duplicate of the file and directory structure is a lot handier than having to use some archiving tool's interface (at least the ones I've used).

But a straight file copy isn't sufficient for an operating system backup because a number of the files are in use, or are protected system files. You need a way to take a snapshot of the operating system, once that can be restored in the event of a catastrophic failure. When I had everything on one drive my solution was to periodically use Acronis TrueImage to do a complete copy of the hard drive. But that took up a lot more space than it needed to, as I really only needed a snapshot of the OS.

Multiple system images

There are a number of tools available for making system image backups (such as Acronis), but there's a perfectly usable alternative right in Windows, provided you're running Vista or Windows 7. I'm indebted to Jane Fleming for pointing this out to me - if you haven't already, take the time to read her excellent article on the subject.

> **DISCLAIMER**: Although I describe my backup and restore strategy here, I make no claim as to its effectiveness on your system. You are responsible for verifying that any backup strategy you employ works as you expect it to work!

Freshly paranoid from my Vista fiasco I decided not only to make a system backup after the install process was complete, but to take a series of snapshots along the way in case anything went awry. After I had the initial Windows installation done and I'd run Windows update and installed Microsoft OneNote (so I had access to my software registration info and my task list), I created a system image backup on another drive. Then I worked for a couple of hours installing some more software, followed by another system image. As I write this article I have five system images, and I'll probably create a few more as I go. The first image I created took up 8GB; the most recent one, after installing 30+ programs, is around 18GB. On the other hand, I have close to half a terabyte of data on my D drive, none of which should need to change if I reinstall the operating system.

In her article Jane used the command line wbadmin (Windows Backup Admin) program to initiate backups and restores. Again, if you haven't already, read Jane's article now.

You can also use the GUI front end to wbadmin: just open the control panel, type backup in the search field and look for the Backup and Restore entry (Figure 1). Click on
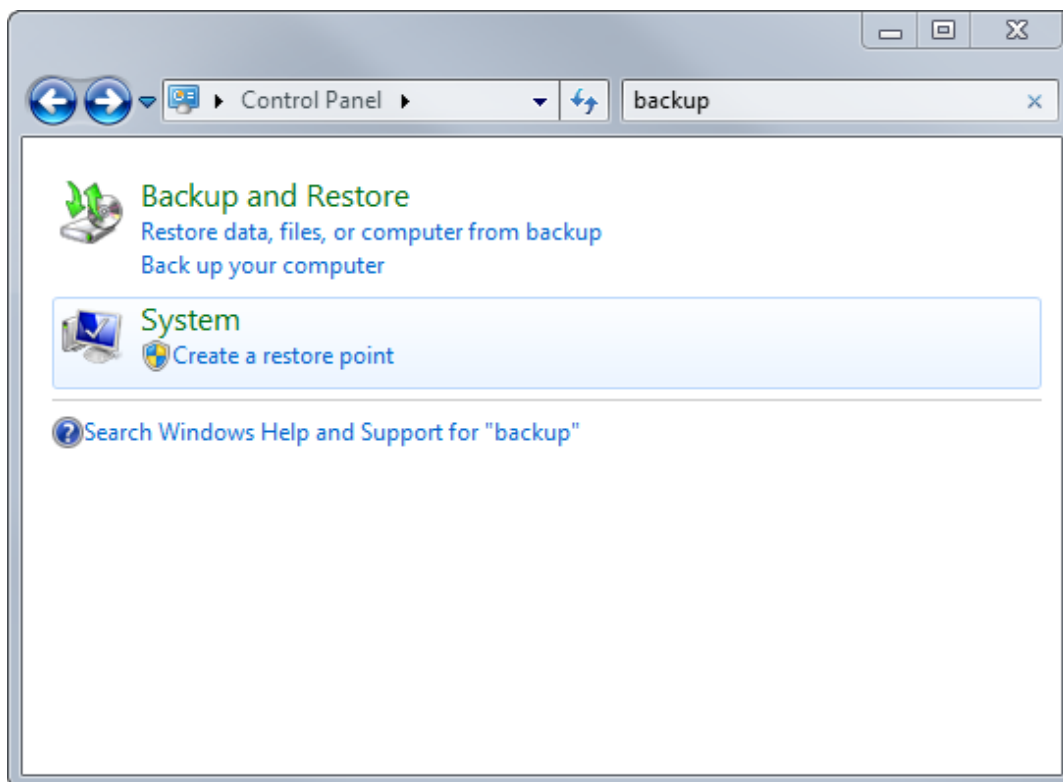

Figure 1. Locating the Backup and Restore option in the Control Panel

Next click on "Back up your computer". You'll see the window in Figure 2.
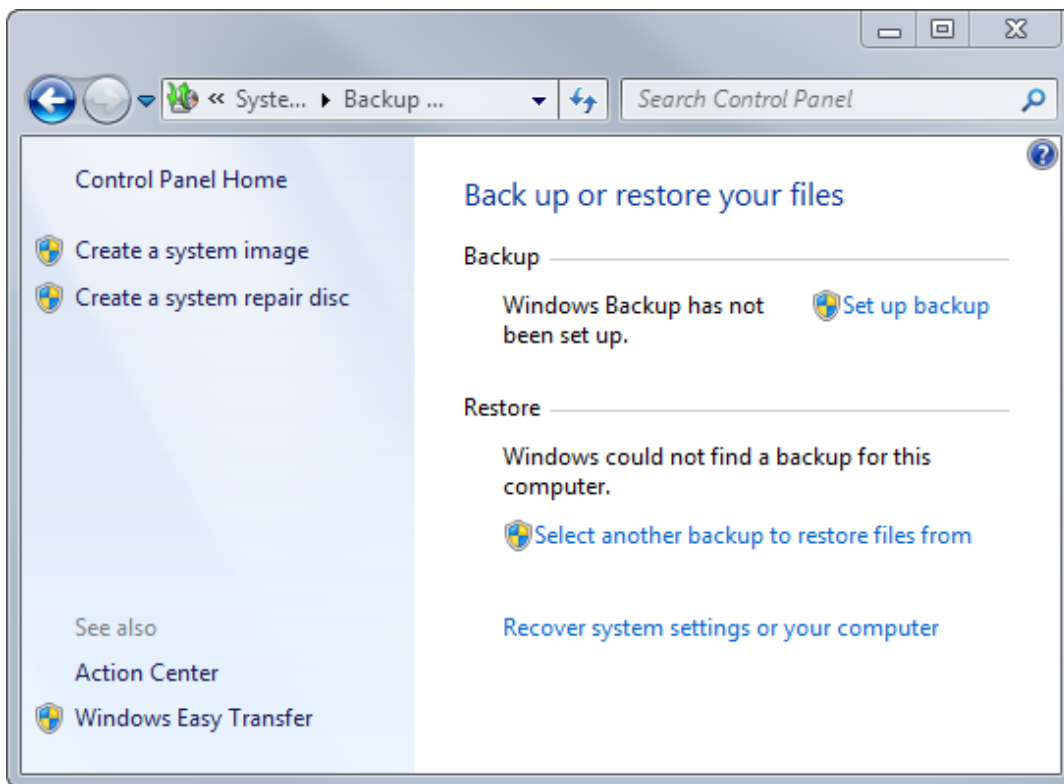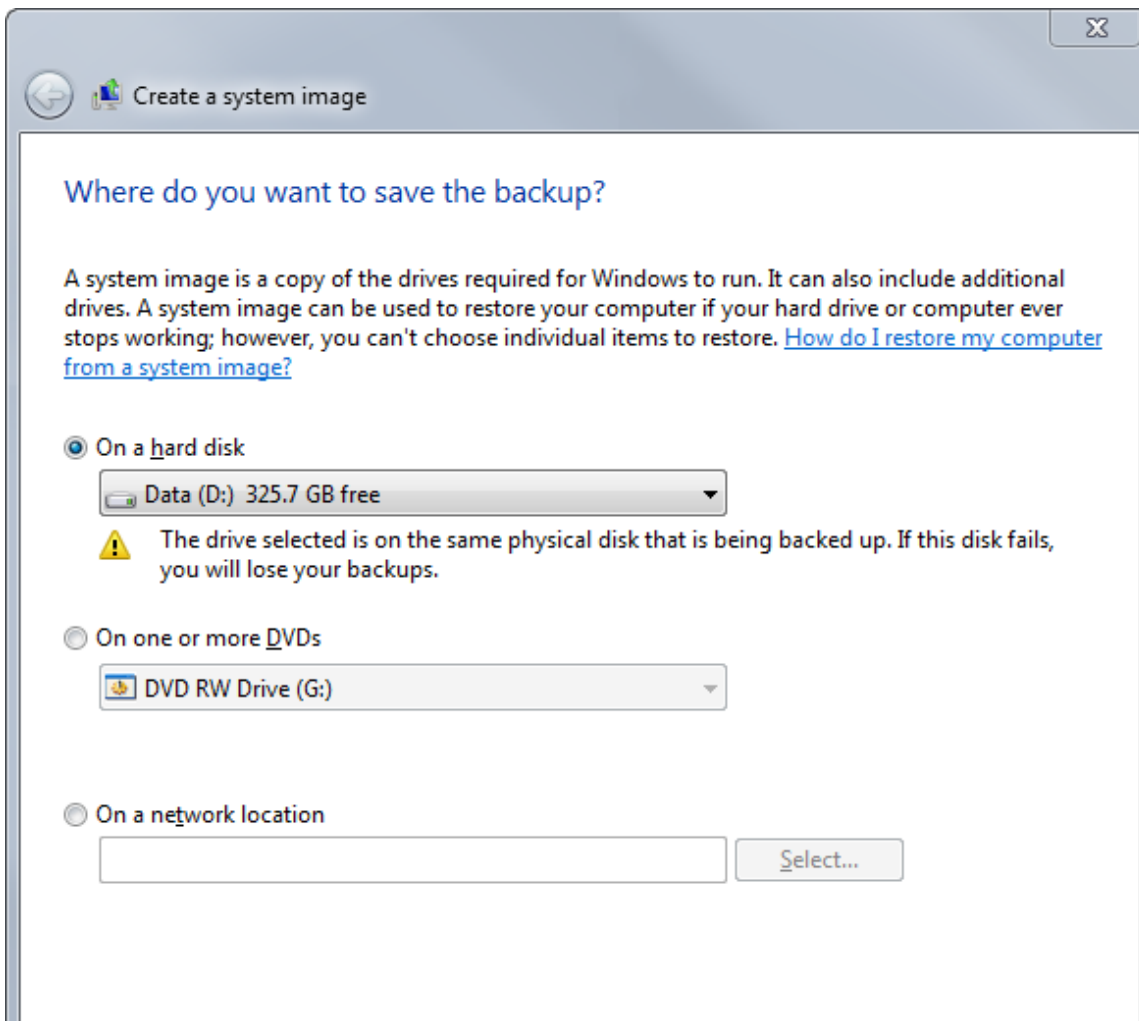
Figure 2. Choosing the backup option

Now click on "Create a system image" and you'll see the window in Figure 3.
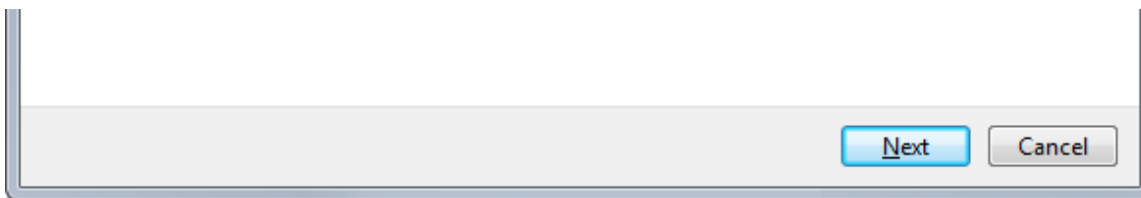
Figure 3. Creating the system image

I chose to create my backups on my D drive, despite the warning. My D drive is on the mirrored RAID array which offers some protection against hard drive failure, but more importantly I keep rotating copies of my D drive offsite. With an image of my C drive on my D drive I have both drives covered.

If you proceed with the system image backup to a hard drive Windows will first take a snapshot of the operating system (Figure 4) and then back it up to the destination drive in a directory called WindowsImageBackup.
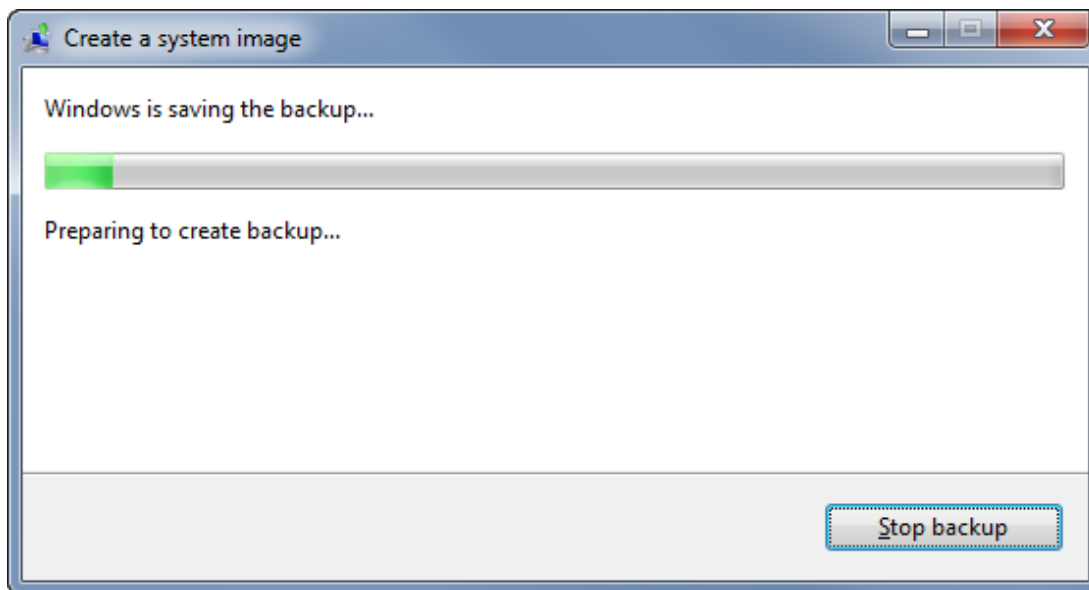
Figure 4. Windows backup taking a snapshot of the operating system

If you later do another backup to the same destination, Windows will merge any changes into the backup rather than create another completely new copy. This saves space, and it's the canonical approach, but it also means there's just a single backup. What if you want to make multiple discrete backups? You can in fact just rename the WindowsImageBackup directory or move the files elsewhere, and next time around Windows will create a new backup. I decided to take this approach and I ended up with the directory structure shown in Figure 5. I've expanded the first WindowsImageBackup directory so you can see its subdirectories; Buckaroo is the name of the computer.
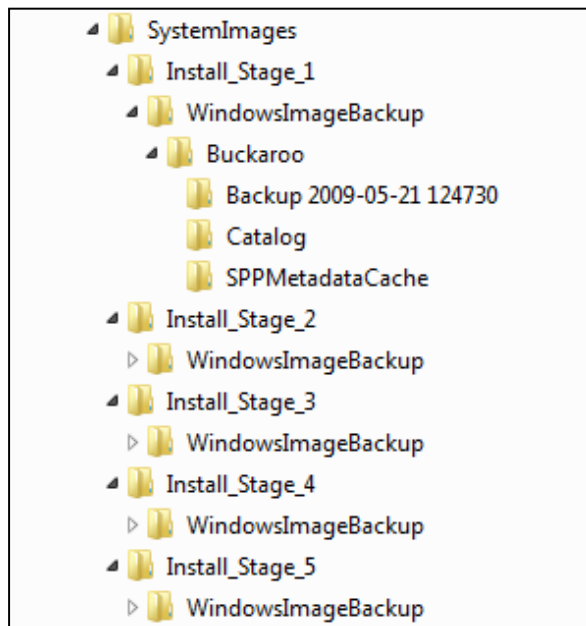
Figure 5. Keeping separate system image backups

Naturally, I needed to verify that the files would available if I needed to do a restore. I tried to get wbadmin to at least recognize the backup. As long as I used the original directory structure, the command wbadmin get versions -backuptarget:d: worked just fine. But if I moved the backup directory wbadmin couldn't find it. Eventually I discovered that I had to set up a network share to the directory *above* the WindowsImageBackup directory, and then specify the share on the wbadmin command line:

    wbadmin get versions -backuptarget:\\BUCKAROO\Install_Stage_5

This command yielded the following:

    wbadmin 1.0 - Backup command-line tool
     (C) Copyright 2004 Microsoft Corp.

    Backup time: 21/05/2009 1:04 PM
      Backup target: Fixed Disk labeled Data(D:)
      Version identifier: 05/21/2009-18:04
      Can recover: Volume(s), File(s), Application(s), Bare Metal Recovery, System Sta
      te
      Snapshot ID: {ec840cce-3af2-4717-b3b0-34d4b2a1a800}

The output from wbadmin might lead you to think you can retrieve individual files, but on Vista and Windows 7 that functionality isn't supported. On the other hand, as Jane noted wbadmin creates system image files which can be mounted as virtual machines with Microsoft Virtual Server 2005. Unfortunately, I couldn't quite figure out how to get Virtual Server set up on Windows 7 even following Jane's instructions, mainly because I couldn't find a way to manually add the vhdmount driver.

Mounting a system image as a drive

Thanks to Dave Northey's blog post I discovered the next best thing to mounting the system image as a virtual machine: mounting it as a hard drive. It turns out there's some new functionality in the DiskPart utility, specific to Windows 7 and Windows Server 2008 R2. At a command prompt type diskpart to load the utility. Then you only need two commands: sel vdisk to specify the name of the disk image file, and attach vdisk to attach the image as a drive. I've highlighted the commands in bold (line breaks added):

D:\>diskpart

Microsoft DiskPart version 6.1.7100
   Copyright (C) 1999-2008 Microsoft Corporation.
   On computer: BUCKAROO

DISKPART> sel vdisk file="D:\SystemImages\Install_Stage_5\↵
   WindowsImageBackup\Buckaroo\Backup 2009-05-21 180449\↵
   85f57449-45f1-11de-a0cf-806e6f6e6963.vhd"

DiskPart successfully selected the virtual disk file.

DISKPART> attach vdisk

 100 percent completed

DiskPart successfully attached the virtual disk file.

Presto! DiskPart loaded up the system image as my H drive and I was able to use it like any other drive.

Summary

Two complete operating system reinstalls in two weeks isn't my idea of a good time, but it did give me a chance to refine my install strategy. By returning to my old practice of isolating operating system and program files from data I reduced the time it takes to do an operating system backup. Like Vista, Windows 7 can make compressed system image backups, and it's not hard to keep completely separate image backups rather than cumulative backups, if you so wish.

Since I store the system images on my data drive I still only need to keep offsite backups of a single drive. And if I need to restore individual files I can use Windows 7's DiskPart enhancement to mount the system image as a virtual drive.

David Harms is an independent software developer and the editor and publisher of Clarion Magazine. He is also co-author with Ross Santos of *Developing Clarion for Windows Applications*, published by SAMS (1995), and has written or co-written several Java books. David is a member of the American Society of Journalists and Authors (ASJA).

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Clarion Magazine

A C7 Slider Control

by Dave Harms and Lee White

Published 2009-05-29

Clarion has never shipped with a slider control; if you want one you either need to use a third party control or create a slider at runtime via the Windows API. The latter subject has been covered before in both Clarion Magazine and Clarion Online: see Pierre Tremblay's Sliders! and Jeff Slarve's Looks like a Slider - Acts Like a Slider - Tastes Like Chicken.

Pierre's article is the newer of the two, but even that was written almost ten years ago. And unfortunately Pierre's code no longer works in Clarion 7.

Happily, Lee White and Bob Dobbins made some changes to the code years ago, and that version works fine with C7 (see Figure 1).
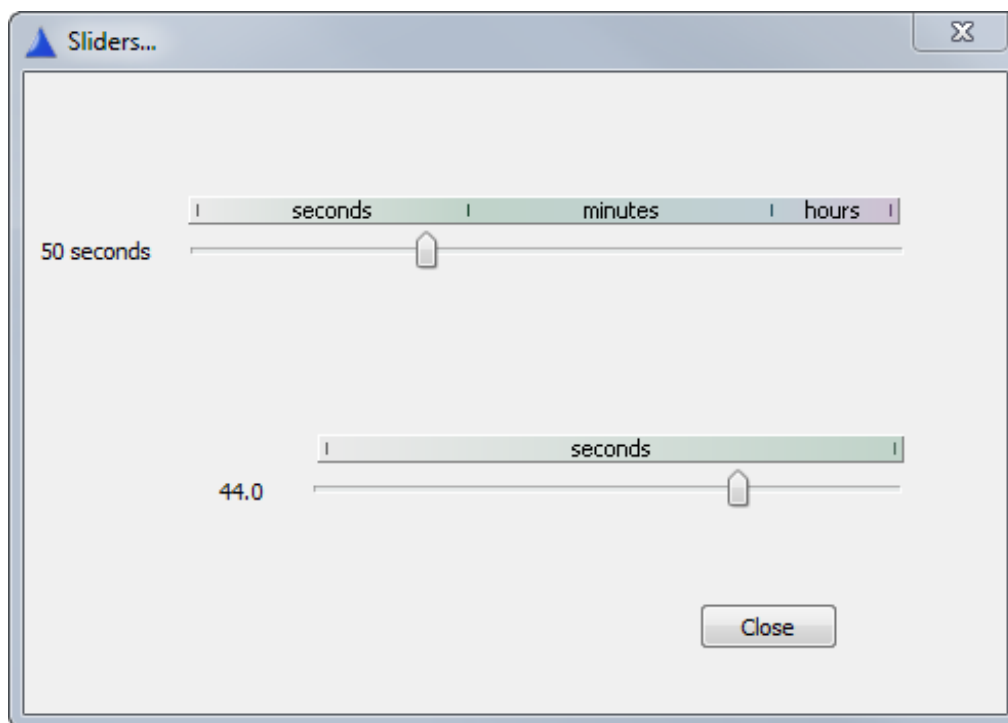

Figure 1. A C7 slider demo

There are actually two classes used in this slider: the cControl class and the cTrackbar class, which is derived from cControl. The idea is the cControl implements any code common to API controls, while the cTrackbar class adds slider (a.k.a. trackbar) specific code. Almost all the code is in the cTrackbar class.

To create a slider control you place a REGION control on your window and then call the CreateTB method, passing in the field equate of the region and the handle to the window's client area. You may wish to do some setup as well. Here's the code

from Lee's example:

```
Slider1.m_Style = bor(WS_CHILD, bor(WS_VISIBLE, WS_TABSTOP))
Slider1.m_Style = bor(Slider1.m_Style, TBS_TOP)
Slider1.m_Style = bor(Slider1.m_Style, TBS_NOTICKS)
Slider1.m_StyleEx = 0
IF NOT Slider1.CreateTB(?Slider1, 0{PROP:ClientHandle})
   MESSAGE('|Unable to initialize user interface (1)'|
      & '||Program halted!|', 'Error', ICON:Hand)
   RETURN
END
```

After the slider is created you can set the limit, position, and also assign a variable to hold the slider's position value.

```
Slider1.m_SliderPos &= BaseDelaySlider
Slider1.SetLimit(4,139)
Slider1.SetPos(BaseDelaySlider)
```

Class modifications

Since the class needs to support multiple instances of slider controls, the original version used a queue to keep track of the window and control handles and the control instances:

```
HandlerQueue      queue
qHwnd             HWND
qControlHwnd        HWND
qControl          &cControl
          end
```

This version of the class splits the client subclassing information out into a second queue:

```
HandlerQueue      queue
qControlHwnd        HWND
qControl          &cControl
qControlLong        LONG
          end


ClientQueue       QUEUE
c_hWnd              LONG
c_Long              LONG
          END
```

There will be one record in the HandlerQueue for every slider control, and one record in the ClientQueue for every window that has at least one slider control.

This new version adds six new methods to the class, the first four of which are self-explanatory:

```
Disable          PROCEDURE
Enable           PROCEDURE
Hide             PROCEDURE
Unhide           PROCEDURE
Select           PROCEDURE
Follows          PROCEDURE(LONG pFEQ),BOOL,PROC
```

Unlike the original, this class hides the control by default once it's created, so you have to explicitly unhide it. The Follows method is normally only called internally by the class to set the control's correct Z order - that way the tab order is automatically handled. This won't work when the slider is the first control in the tab or window, however; in that case you have to explicitly call the Select method.

For more detail on the concepts behind the class see Pierre's article.

The downloadable source contains a C7 solution and a hand-coded demo.

Download the source

David Harms is an independent software developer and the editor and publisher of Clarion Magazine. He is also co-author with Ross Santos of *Developing Clarion for Windows Applications*, published by SAMS (1995), and has written or co-written several Java books. David is a member of the American Society of Journalists and Authors (ASJA).

Lee White's introduction to computer languages began during his sophomore year in high school, through an open class at the University of Alabama, c1969. His first language was Fortran 4 with Watfor. Introduced to Clarion 2.1 in 1990, he has remained a steadfast Clarion user and supporter. He is often better known for his contributions to the etc conferences and third party products.

Reader Comments

Posted on Friday, May 29, 2009 by Stephen Bottomley

Dave,

Nice article, thanks, I'm about to start on a project that can make use of sliders.

I also have a vague memory of Clarion having a slider way back in the day (1.0, 1.5 maybe) and then being pulled. Maybe it was pre-release code or indeed it is very likely my memory is shot :)

Steve B.

Posted on Monday, June 01, 2009 by Dave Harms

Steve,

I don't recall a shipping slider control but who knows, I've forgotten plenty!

Dave

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DevCon in 2009?

Direct link

Posted Friday, May 01, 2009 by Dave Harms

Watching the webinar - Z just said there will definitely be a DevCon in 2009...

Now, he also said that it won't be until after there's a .NET AppGen, which he's previously indicated is 3-6 months away. I'm not sure there's quite enough time in the year for this, as to my mind a DevCon needs a good six months lead time.

UPDATE: Bob F certainly has DevCon on his mind, however. He just mentioned it again...

....

C7 Designer gets C6 compatiblity mode

Direct link

Posted Friday, May 01, 2009 by Dave Harms

As seen in today's webinar, the next release of C7 will feature a C6 compatibility mode to retain the decidedly non-industry-standard behavior of being able to have controls that are declared inside a container control but display outside the container control. In that compability mode the designer asks if you want to move controls into/out of the parent (i.e. tab) control, as in C6.

Also of note, the Applications Pad is getting more toolbar buttons and is intended to be the primary way developers interact with APP and DCT files.