Debugging Custom (OCX) Panels With Visual Studio .NET

Application Note

Date	June 22, 2012
Applies To	Kofax Capture 8.0, 9.0, 10.0
Summary	This application note provides the information needed to step through a .NET-based Custom Panel during execution.
Revision	1.2

Overview

When developing and debugging Custom Panels (OCX Panels), it is often desirable to step through the code while it is running.

This provides the ability to examine the actions taking place, along with values being used, in the code during execution. This information can be invaluable during development or troubleshooting any issues that may arrive at a later time.

This application note contains information on the requirements, preparation and basic steps a developer can use to step through the source code for a Custom Panel using Visual Studio .NET. This Application Note specifically deals with the debugging of Custom Panels created with Visual Studio .NET 2008 or later.

Requirements

To implement the following procedures, you must have a Visual Studio .NET development environment installed on a machine with a Kofax Capture Standalone installation, a Capture Client installation or a Capture Server installation with client applications installed. Also, a batch containing documents that are ready to be processed for the specific module (queue) to which the Custom Panel is installed will be needed.

Compiling with Binary Compatibility

Previous versions of Kofax Capture made use of Visual Basic 6.0 for development. In these cases, it was recommended to set the Source Code project for Binary Compatibility.

In Visual Basic .NET, Binary Compatibility is accomplished through attributes giving a developer direct control over the information placed in the compiled component, such as class and interface identifiers. As a consequence, Binary Compatibility is no longer an issue.

Debugging with .NET Framework 4.0

Capture was created using Visual C++ and Visual Basic 6 as well as .NET Framework 2.0 (Capture 8.0) or .NET Framework 3.5 SP1 (Capture 9.0 and 10.0).

Because of this blend of Managed (.NET) and Unmanaged (Non-.NET) components, some modules, such as Administration, Validation and Export, are "Unmanaged", and will run against the latest version of the .NET Framework installed, which can be .NET Framework 4.0.

Kofax Knowledge Base Article QAID 16107 addresses this issue and provides a solution. Use the link below to see this Article.

http://knowledgebase.kofax.com/faqsearch/results.aspx?QAID=16107

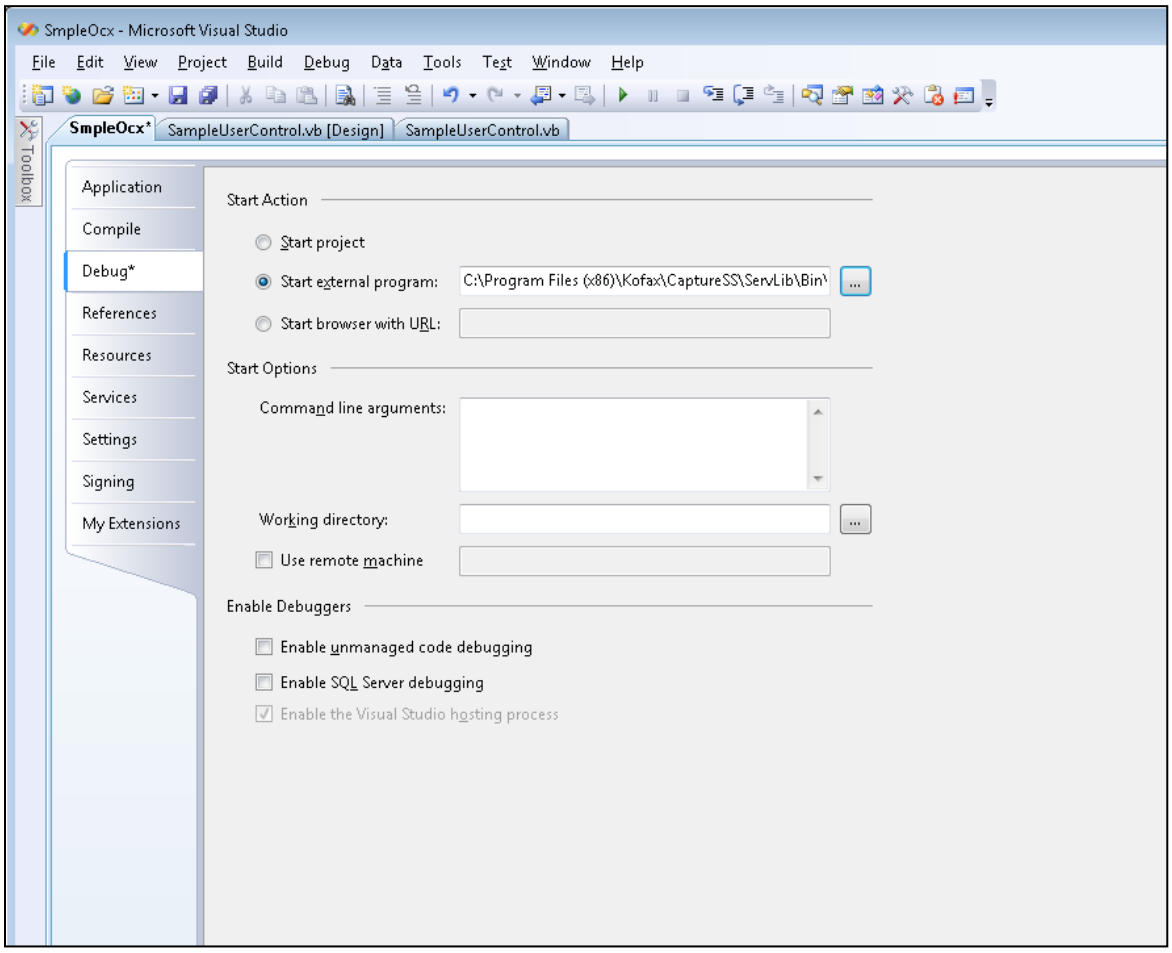
Stepping Through the Code

The most flexible method of examining what is happening in a Custom Panel is to step through the code during execution.

Setting the Custom Panel to Automatically Launch Into Debug Mode

After loading the source code for the Custom Panel in Visual Studio .NET, the Custom Panel can be set to automatically launch Export. This is set in the project's properties selection available under the Project menu (Project ¦ <Project Name> Properties...).

Under the Debug tab are the debug options available for the project, including the ability to start an external program such as the Validation module (Index.exe).



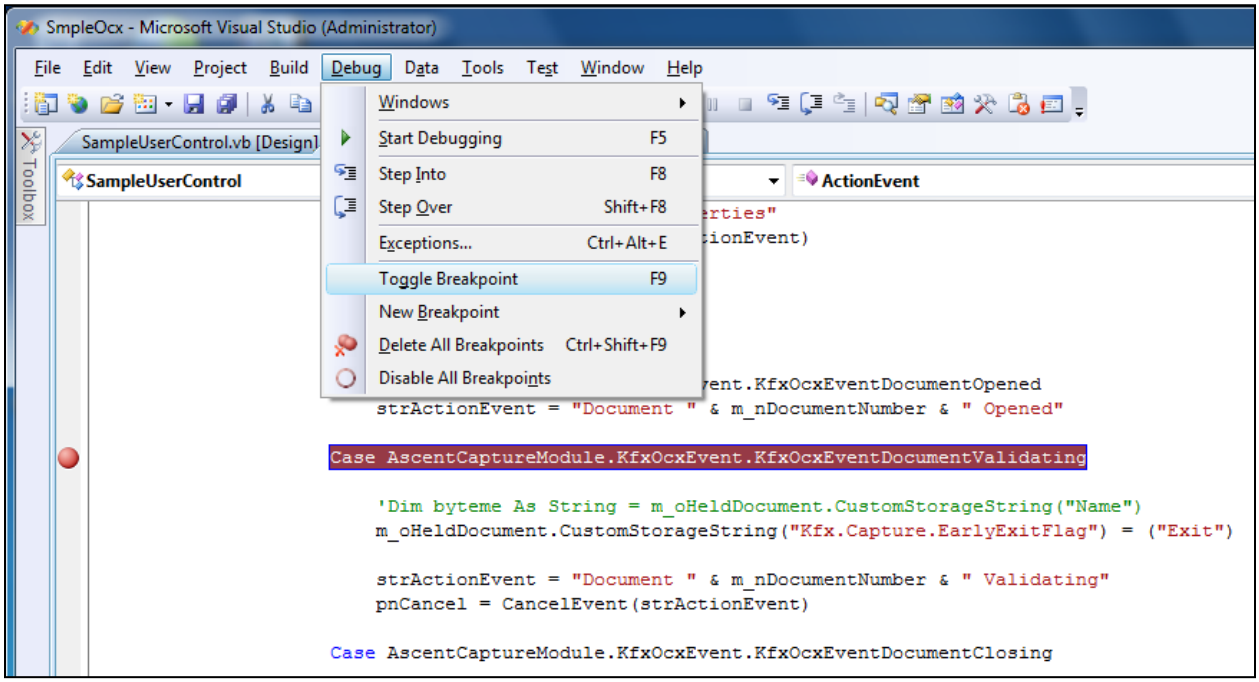
In cases where the selected module is already running, it may be easier to attach to the existing process.

If so, the Custom Panel properties should not be set to automatically launch the module. The project should be left to the default setting of "Start project". The instructions to attach to the selected module, "existing process", are presented later in this Application Note in the "Attaching to a Existing Process" section.

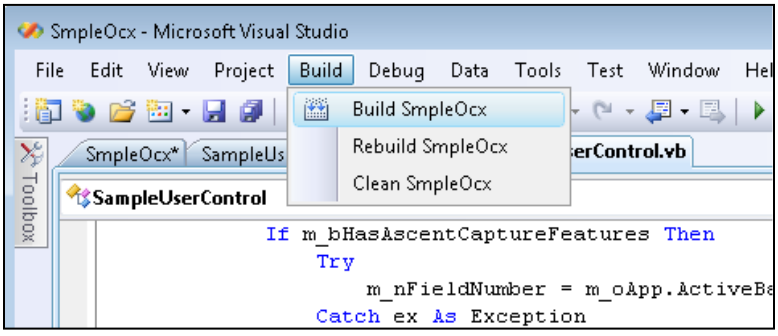
Setting the Breakpoint

This screenshot is from the sample Custom Panel provided with Capture. A breakpoint is set in the ActionEvent() function with the Case statement for the Document Validating Event, “KfxOcxEventDocumentValidating”.

The breakpoint can be activated by clicking the left hand margin of the code window on the line you wish to set it, or by selecting "Toggle Breakpoint" from the Debug menu or pressing F9.

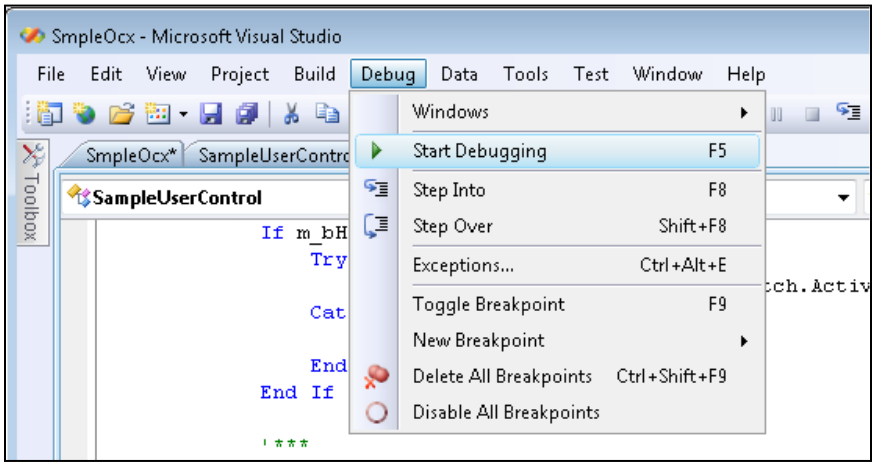


After the breakpoint has been created, build the project from the Build menu.



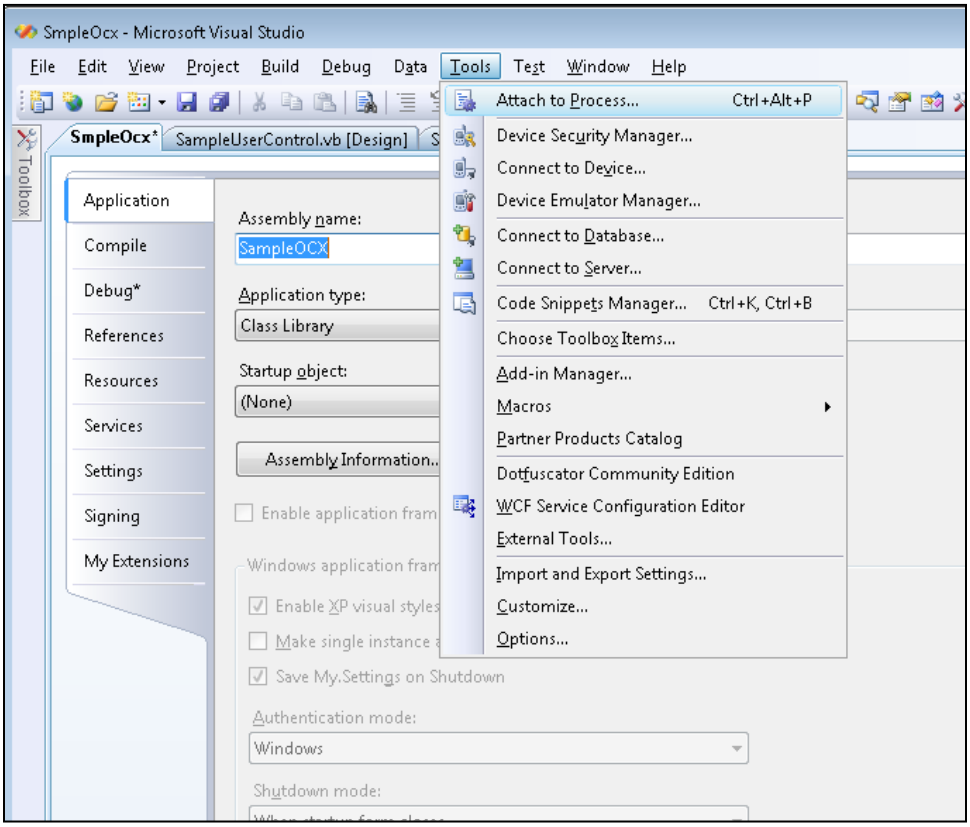
Stepping Through the Code

Process a batch through to the selected module. This can be done by either launching the module directly or by selecting a batch in the Batch Manager and clicking the Process Batch button. Visual Studio .NET is now ready to begin the debugging process and step through the code. Start the Visual Studio debugger from the Debug menu or by pressing **F5**.

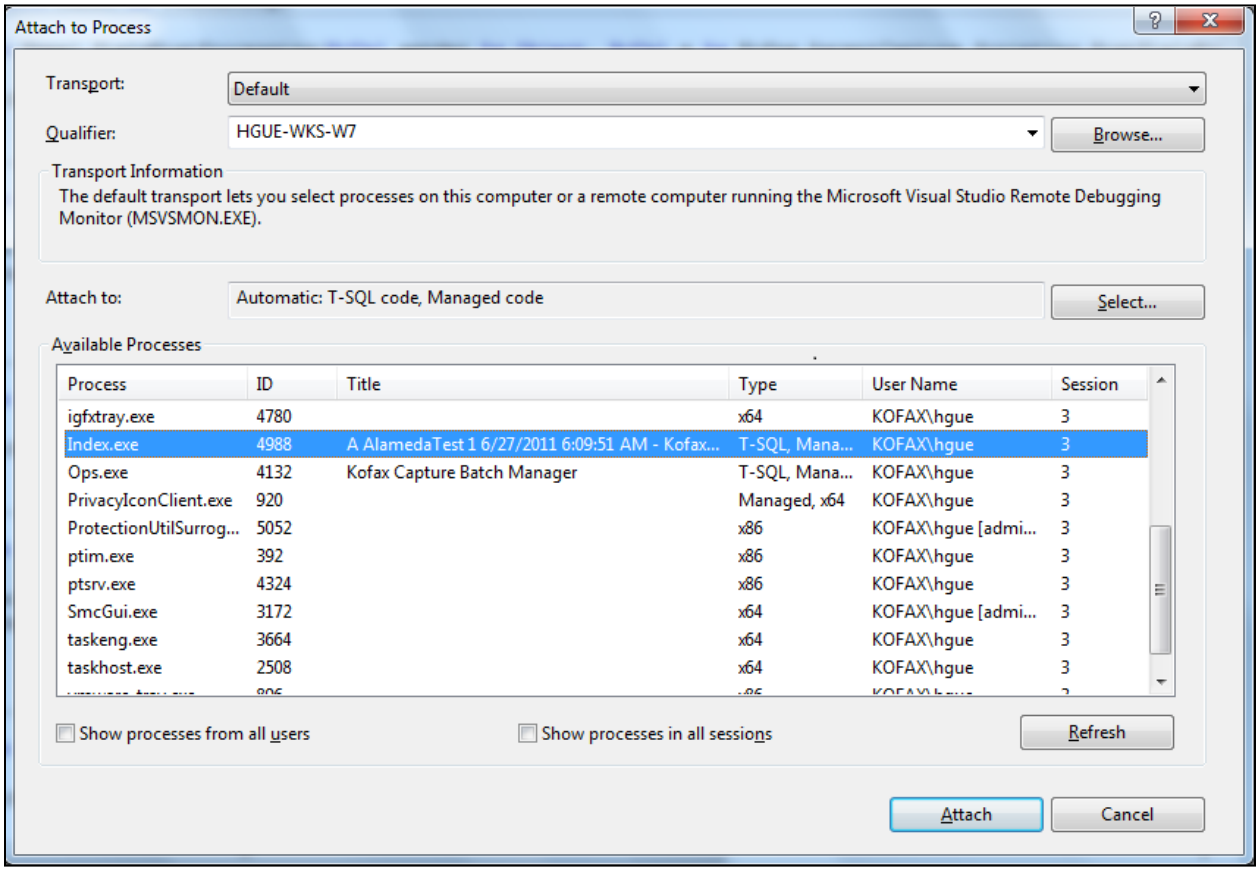


Attaching to a Existing Process

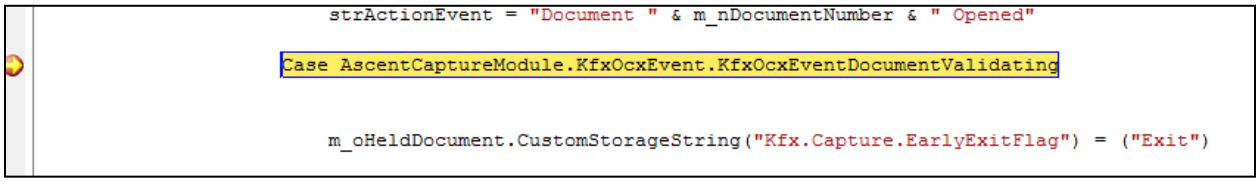
If the project is not set to automatically launch the module, the project will need to be attached to it. This can be done from the Processes dialog box. This is available under the Debug menu (Debug ¦ Attach to Process...) and under the Tools menu (Tools ¦ Attach to Process...).



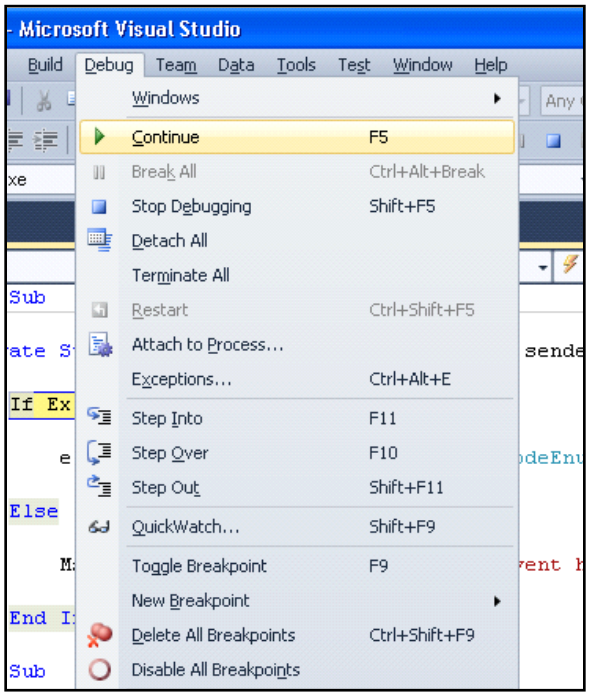
Select the desired process (module) from the Processes dialog box. For example, if the Custom Panel is set with the Validation module, select the process “Index.exe”.



The module will launch and call the Custom Panel. When the Custom Panel process reaches the selected breakpoint, it will stop and highlight the running line of code.



You can now step through the code using "Step Into" **F11**, "Step Over" **F10** and "Step Out" **Shift+F11**. Each time the **F11** key is pressed, one operation will be performed. This will advance to the next line of code and reveal exactly what code is being run. To continue processing normally, simply press the **F5** key and the code will continue to process until the next time a Breakpoint is encountered or the process has been completed.



To stop debugging, simply click the "Stop Debugging" **Shift+F5** keys or select the menu entry.

Summary

Using the techniques noted in this Application Note, a developer can step through a Custom Panel as it is running to see the actions taking place and values being used. This will provide the information needed to address any issues such as fix an error condition that occurs, or modifying the Custom Panel to handle any given situation as needed.