

ColdFusion Developer's Journal

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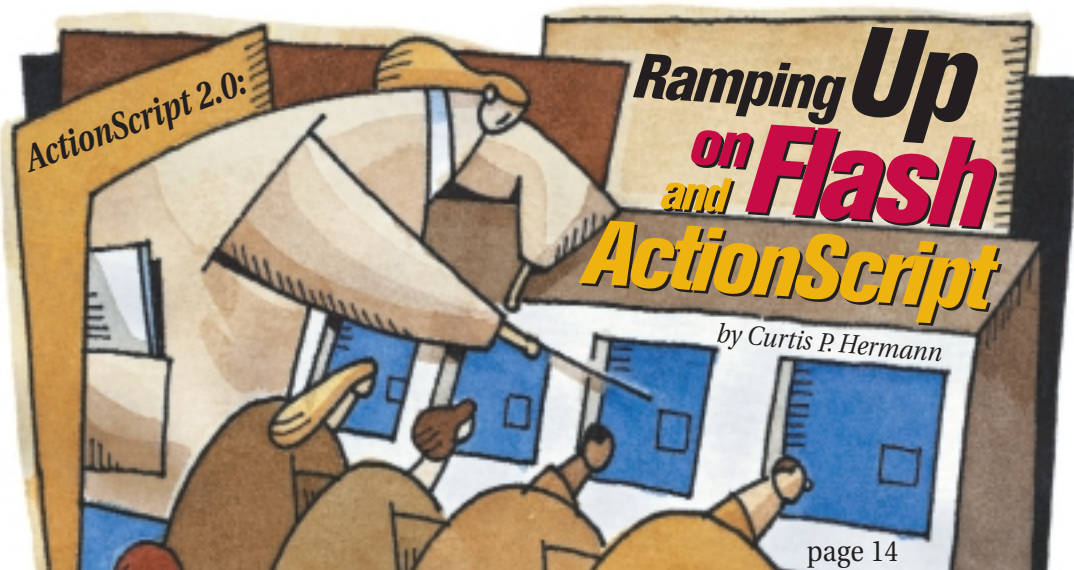
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Field Name	Field Type	Field
id	int	1
name	varchar(255)	2
parent_id	int	3
lft	int	4
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A Suggested New Year's Resolution

ColdFusion as a whole faces many challenges in the year ahead, as does each of us in the CF development community. These challenges range from those beyond our individual control, like the economy, to things that we can control like our skillsets. Then there are the unexpected challenges that get thrown at us – hackers, and whatever else crops up along the way to interfere with our sleep.

There's no magic solution to these problems, but there is a very easy way to get help with each of them, and that's to get involved in the CF community. Subscribing to *CFDJ* is a great start, and something I certainly advocate, but beyond the magazine are great resources and all you need to access them is to get involved.

A recent example of community help came into play when *CFDJ*'s Web site, along with the rest of the sys-con.com family of sites was (and still is as of this writing) being hit with something symptomatic of a denial-of-service attack. Unfortunately, it's not something that can be traced to a nasty group, or to a lone nut hacker, but rather it's one that came from tons of sources functioning as attempted "spam bots" resulting in a sevenfold increase in server traffic before we were able to get a handle on it.

I can proudly report that our servers stayed up throughout the whole crisis (albeit running slower than normal), which is a testament to CFMX, some good hardware, a stable database system, and a lot of good code. As the number of simultaneous requests hitting the servers continued to increase, it again emphasized the point that I've made in this space several times – and that *CFDJ* covers every month – which is how important proper coding, caching, and other optimization techniques are. Not only will they help out in attacks like this, but your everyday users will appreciate them as well.

As we struggled to stop the incoming flow, we found that stepping up the security levels on our firewall, a seemingly logical first step, only provided marginal success at best since the requests weren't coming in on nonstandard ports. What eventually did do the trick was some code for Apache from Scott Wiersdorf @ www.perlcode.org/tutorials/apache/attacks.html.

Basically, those brilliant nine lines of http.conf code trapped these attacks that were coming in without a user-agent, or referrer and were

accessing just '/.' These requests were a) redirected back to the source (a lovely touch if you ask me and one that has certainly brought a reduction in the overall level); and b) not passed on to ColdFusion to execute, nor were they logged.

We solved this problem with Scott's hands-on help, and what this whole incident drove home for me (other than the fact that the people

that come up with these attacks should be rounded up and forced into more awful things than I'm allowed to write in these pages) is another example of the fantastic developer community that's out there, and that can be called upon when in need. You don't need to wait

for a disaster to strike, because staying in touch with the community can help you in your daily tasks – learning what else is out there; expanding your knowledge; and most of all staying current on trends, resources, and solutions to those problems that will undoubtedly crop up.

So if you haven't made a New Year's resolution yet, or even if you have, getting involved in the CF community is worth adding to the list (and keeping, unlike those diets and other plans). If you've been to Macromedia's conferences, user groups, or the other smaller events out there, then you know exactly what I'm talking about. If you're an active participant in one of the many CF mailing lists or Web forums out there, then you know exactly what I'm talking about too. If you're not yet a part, then I hope to see you out there in 2004. It's going to be an exciting year.

**About the Author**

Robert Diamond is vice president of information systems for SYS-CON Media, and editor-in-chief of ColdFusion Developer's Journal.

Named one of the "Top thirty magazine industry executives under the age of 30" in Folio magazine's November 2000 issue, Robert holds a BS degree in information management and technology from the School of Information Studies at Syracuse University. Visit his blog at www.robertdiamond.com.
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By Robert Diamond



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Tales from the List

Know thy platform!

This month we're talking about Java, Web services, and "things not CF" – topics that are fast becoming common subjects of discussion among CFers. I'm not going to focus on just one *CFDJ* List thread, but on several recent threads and examples that illustrate the trend, and a recent new requirement to explore other technologies.

As everyone knows by now, with the release of ColdFusion MX the ColdFusion Application Server now runs on top of the Java platform. A world of new functionality now exists under the hood, just waiting for CF developers to take advantage of and find clever uses for it. For example, how many times have you created a ColdFusion variable and then used the ampersand operator in your CFML code to append characters to this string? It's not an uncommon occurrence at all. While there's nothing inherently wrong with this practice – there is another way!

In Java there's a class called the StringBuffer class. In addition to other uses, it's often used in servlet programming to build an HTML string before returning it to the browser. It's quite easy to use a StringBuffer instead of a ColdFusion variable to store and manipulate strings; the advantage is that StringBuffer objects have a built-in method that performs concatenation with the current value. This means that rather than instantiating a new object in memory every time you concatenate (which is what happens in CFML), you can create one object and tell it to concatenate on itself. Listing 1 shows the code, shown first using "standard" CFML and then using Java syntax, to loop from 1–10 in <CFSCRIPT> and build a string as you loop.

You might be wondering how much impact this can have on an application. That depends entirely on how much string manipulation you need to perform. There is a performance impact on creating a new object in memory each time a string is manipulated (which is what happens using "traditional" CFML string manipulation methods). When I tested each of the two different code blocks in my



By Simon Horwith

<CFSCRIPT> example, they took 0 milliseconds each to run. When I increased the loop from 10–10000 iterations however, the "traditional" CFML method of setting a variable equal to itself plus more text took 14,020 milliseconds to run, but the code using a StringBuffer Object took only 420 milliseconds!! That's a performance difference that's hard to ignore... and it takes very little

Java knowledge to implement. The one thing that is arguably sacrificed is readability – some CFML developers may find the StringBuffer Object syntax a little odd at first.

One recent thread that illustrates the need to understand a little bit about how Java and J2EE application servers work was recently posted by Eric Cobb. Eric wrote to the List stating that he was having trouble establishing a connection to an AS/400 from ColdFusion MX. He had downloaded and installed the JDBC driver from IBM and put it in the Java classpath in the ColdFusion Administrator. It sounded

—continued on next page

About the Author

Simon Horwith is co-technical editor of CFDJ, and chief technology officer of eTRILOGY Ltd., a software development company based in London, England. Simon has been using ColdFusion since version 1.5 and is a member of Team Macromedia. He is a Macromedia Certified Advanced ColdFusion and Flash developer and is a Macromedia Certified instructor. In addition to administering the CFDJ List mail list and presenting at CFUGs and conferences around the world, he has also been a contributing author of several books and technical papers.

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like he'd done everything required to be able to connect with the database, but when he tried to create a data source using the "other" database driver option in the DataSources section of the CF Admin, the server reported that a `java.sql.SQLException` was thrown (no driver was found). As far as I know, there's no reason why what he had tried wouldn't work but he'd spent a lot of time, and the problem could be any one of a number of things. Rather than exchanging a dozen e-mails in order to deduct the root of the problem, I simply asked Eric to try putting the .jar files (the JDBC database drivers) in the "lib" directory of ColdFusion's installation directory and then cycle the server. Eric posted two minutes later that he was now able to create data-source connections with no problem.

Did I know what to do because I have years of experience connecting to AS/400 midrange computers via JDBC? No, not at all. In fact, I've never had to create a JDBC connection to an AS/400 from ColdFusion. A very basic knowledge of how applications and EJBs are deployed on a J2EE application server is all you need to deduct that dropping a .jar file into an application server or server instance's "lib" directory will guarantee that the classes will be available when the server is started.

A simple two-minute exercise allowed Eric to eliminate JVM configuration or file location problems as possible causes. If

putting the drivers in the "lib" directory hadn't worked, the most likely culprit would then have been the information he was using when attempting to create the data source. The thread also spawned a good discussion about the J2EE framework and Java resources and recommended reading.

In addition to the ability to apply a little bit of Java knowledge in order to take advantage of the functionality and features of ColdFusion's underlying J2EE architecture, it's important to also gain knowledge of other technologies. ColdFusion MX added support for XML and for Web services to the CFML language. Like most things in CFML, you do not need to have expert knowledge in order to use these technologies in your CFML applications, but having an understanding of the ways in which these other technologies work will help you in your CFML application development.

A good example of this is a thread posted by Stephen Moretti. Stephen posted to the List frustrated over repeatedly unsuccessful attempts to consume a specific .NET Web service from ColdFusion. He showed the relevant parts of the WSDL file along with the code he was using to try to consume the Web service and the error message being returned. It appeared that the cause was most likely a user-defined enum datatype argument, but

—continued on page 41

Listing 1

```
<cfscript>
/*****
typical CF Code to count to 10 Mississippi
*****/
// initialize CF Variable
myStr = "";
// loop from 1 to 10 and create a variable each time
for (i = 1; i lte 10; i = i + 1){
    myStr = variables.myStr & variables.i & " Mississippi<br>";
}
// display string
writeOutput(variables.myStr);

/*****
CFML "java" Code to count to 10 Mississippi
*****/
// initialize Java StringBuffer Object
myStr = createObject("java", "java.lang.StringBuffer");
// loop from 1 to 10 and call the append method each time
for (i = 1; i lte 10000; i = i + 1){
    myStr.append(variables.i & " Mississippi<br>");
}
// display string
writeOutput(variables.myStr.toString());
</cfscript>
```

Listing 2

```
<cfscript>
null = "null";
//Date Structure
dateRange = StructNew();
dateRange["from"] =
DateFormat(DateAdd("y",-10,Now()),"YYYY-MM-DD")&"T00:00:00Z";
dateRange["to"] =
DateFormat(DateAdd("d",+10,Now()),"YYYY-MM-DD")&"T00:00:00Z";

ListProducts = structnew();
ListProducts["permission"] = null;
```

```
ListProducts["dateRange"] = dateRange;
ListProducts["postCodeArea"] = null;
ListProducts["rtb"] = null;
ListProducts["hasRatings"] = "Either";
ListProducts["productType"] = null;
```

```
fool = '<?xml version="1.0" encoding="UTF-8"
standalone="no"?><SOAP-ENV:Envelope
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:s="http://www.w3.org/2001/XMLSchema" xmlns:s0="http://{Stephen's
domain}"/>
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
><SOAP-ENV:Body><s0:ListProducts xmlns:s0="http://{Stephen's
domain}"/><s0:permission></s0:permission><s0:dateRange><s0:From>#dateRange[
from]#</s0:From><s0:To>#dateRange["to"]#</s0:To></s0:dateRange><s0:postCod
e
Area>#ListProducts["postCodeArea"]#</s0:postCodeArea><s0:rtb>#ListProducts[
rtb]#</s0:rtb><s0:hasRatings>#ListProducts["hasRatings"]#</s0:hasRatings><
s
0:productType>#ListProducts["productType"]#</s0:productType></s0:ListProduc
t
s></SOAP-ENV:Body></SOAP-ENV:Envelope>';
</cfscript>
```

```
<cfhttp method="post" resolveurl="no" url="{the URI location of Stephen's
asmx file}">
<cfhttpparam type="Header" name="SOAPAction" value="{Stephen's
Server}/ListProducts">
<cfhttpparam type="xml" value="#fool#">
</cfhttp>

<cfoutput>#htmlEditFormat(cfhttp.FileContent)#</cfoutput>
```


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I Don't Hate Dreamweaver

It might be time for a second look

Uttering the dreaded “D” word in front of a room of hard-core ColdFusion developers is a brave act indeed. Hating Dreamweaver and berating its deficiencies has become a popular pastime among ColdFusion purists, so what I’m about to say may get me in all sorts of trouble. But, here goes... I don’t hate Dreamweaver. Actually, and now I’m really asking for it... <nervously> I even kind of like Dreamweaver. Really.

Ben and Dreamweaver: A Brief History

Before I begin, let me explain why I’m even writing this now. At MAX 2003, I presented a hands-on session on using Web services with ColdFusion. The session ran four times, and was more than sold out each time. The attendees used Dreamweaver for all coding, and many expressed surprise that Dreamweaver actually worked for them. In fact, several attendees commented that they liked the features we were using, features they previously did not know even existed in Dreamweaver!

Now I know that some of you are going to assume that, as a Macromedia spokesperson, I have to like and use Dreamweaver. And you’d be wrong. It wasn’t that long ago that I was one of Dreamweaver’s most vocal critics, both internally and publicly. When Allaire and Macromedia merged, the then Dreamweaver product manager asked me for a quote stating that Dreamweaver is the best tool for ColdFusion developers. I refused. I was not going to say that because, frankly, it wasn’t. It wasn’t a product I wanted to use, and I don’t ever recommend anything that I myself would not use. It’s as simple as that.

And then came Dreamweaver MX, and things changed. My biggest objections to earlier versions of Dreamweaver, including



By Ben Forta

all those popup panels, toolbars, and menus that seemed to make little sense, and auto-generation of some of the worst CFML code I have ever seen, had been addressed. The UI was cleaner, I found that I had far greater control over what toolbars and menus and panels were staring at me, and the generated CFML code is actually quite good (the Dreamweaver team even invited me to critique the code generated previously and made lots of changes based on my recommendations).

Not that Dreamweaver MX was perfect; it was not, but suddenly I found myself hating it a whole lot less. Of course, there were still things that bugged me about it. Application load time was appalling, having to define sites for everything was a pain, and the SQL query builder was less than useful.

And then came Dreamweaver MX 2004, and once again things improved. The load time, while still not as snappy as I’d like, is much better, and sites are no longer needed. (The SQL query builder, unfortunately, is still useful only to absolute beginners.) And something funny happened: I actually found myself using Dreamweaver more and more, to the point that I barely use ColdFusion Studio (oops, I mean HomeSite+) anymore. I really have gotten used to Dreamweaver, and have even started to like it!

So, is Dreamweaver MX 2004 the best tool for ColdFusion developers, and if I was asked to say so now would I be able to do so? I think I’d have to answer that with a qualified “possibly.” It is probably not the best tool for all ColdFusion developers, but for many it is. Is Dreamweaver MX 2004 a replacement for ColdFusion Studio? Absolutely not (and I know that some Macromedia sales reps spin Dreamweaver that way, and they’re

wrong). If it was, we’d not include HomeSite+ with every copy of Dreamweaver bought, would we? The reason we provide both products is that there is value in both, and as a ColdFusion developer you get to pick which works best for you, using one or both as suits you best. (Yes, if you are a Windows Dreamweaver user, then you already have a copy of HomeSite+ that you may use too; it’s included with Dreamweaver but needs to be installed separately.)



So, Dreamweaver has gotten better, but it is not a ColdFusion Studio replacement. Why use it? Why have I started to like it? Simply because there are Dreamweaver features that I really do like, features that I have come to rely on heavily, features that are uniquely Dreamweaver, features like the ones I'll now describe.

Cool Feature #1: CFC Introspection

The Dreamweaver Application panel hosts four tabs, two of which are incredibly useful (sorry, the Bindings and Server Behaviors tabs do nothing for me personally). The Databases tab functions just like the ColdFusion Studio Databases tab – it displays defined data sources, and allows drill-down to see tables and schemas (and stored procedures for some DBMSs). Just like in ColdFusion Studio, the Databases tab requires RDS support (but unlike ColdFusion Studio, viewing data won't try to retrieve every row, effectively killing your machine).

But Databases is not the tab I'm most interested in. The fun one is the fourth one, the one labeled Components. This tab exposes all available ColdFusion Components in a nice tree control (as seen in Figure 1).

The list is built dynamically, returned to Dreamweaver by ColdFusion, and features the following:

- Right-click on any CFC and select Get Details to see the name, path, and inheritance information.
- Right-click on any CFC method and select Get Details to see the name, access level, return type, and more.
- Right-click on any method argument to see the data type, whether or not it is required, and the default value (if there is one).
- Right-click on any CFC and select Get Description to see the ColdFusion generated HTML docs for the component.
- Double-click on any CFC or method to open the file for editing.
- Drag any method into your code and auto-generate the complete <CFINVOKE> call (with any needed <CFINVOKEARGUMENT> tags).

The CFC browser is incredibly useful for individual develop-

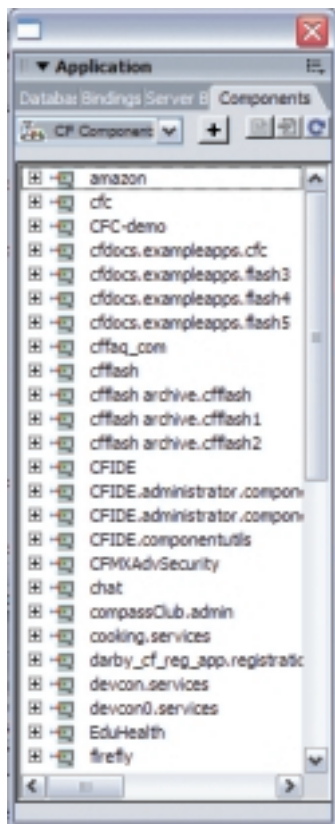


Figure 1: Dreamweaver dynamically displays a list of available ColdFusion Components

ment, and even more so for team development (write a CFC and anyone else on the team can easily find and use it). I've so grown to depend on this feature that this alone has made it difficult for me to go back to ColdFusion Studio.

Cool Feature #2: SOAP Support

Web services are fun, and occasionally useful (okay, I'm being facetious, they're very useful, but most of their use thus far seems to be for playing and for proving that they work; thankfully this is starting to change).

ColdFusion makes Web service invocation easy, and Dreamweaver makes ColdFusion Web service invocation even easier. That same Application panel Components tab lets you switch between ColdFusion Components and Web services. If you select the latter, Dreamweaver displays a list of known Web services in a tree control (seen in Figure 2), allowing you to browse methods, look at parameters, and even auto-generate CFML invocation code by simply dragging methods into your code.

How do you add a Web service to the list? Simply click the + button and you'll be prompted for the WSDL URL (as seen in Figure 3). Enter the URL, and Dreamweaver will obtain it, parse it, and add it to the menu for you. It's that simple.

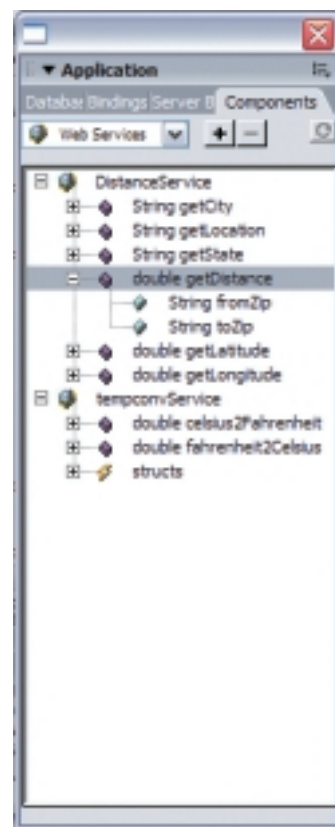


Figure 2: Web services are displayed in an interactive tree control

Cool Feature #3: the CFC Wizard

I've been writing constantly about ColdFusion Components (CFCs) since we first introduced them in ColdFusion MX. I firmly believe that CFCs are the most important core CFML language enhancement since, well, since the creation of CFML.

Creating CFCs requires working with a series of nested tags to define the component, the methods, any method arguments, and the details of each. This is not a terribly difficult process, and

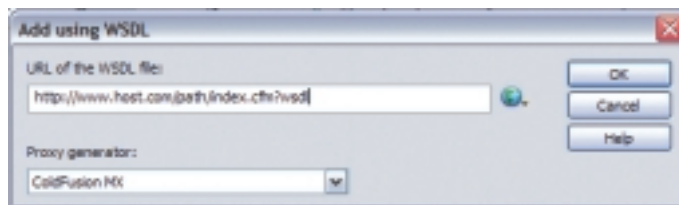


Figure 3: Specify a WSDL URL, and Dreamweaver does the rest



Figure 4: The Create Component wizard interactively builds a complete CFC shell

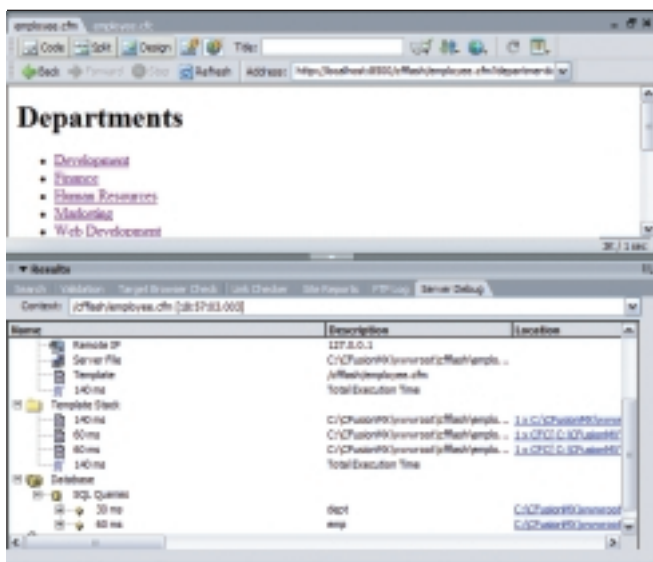


Figure 5: Dreamweaver displays ColdFusion debug output the way it was supposed to be displayed

it is one that can definitely be done by hand. But why would you want to?

Dreamweaver features a Create Component wizard that can build the entire skeleton CFC for you. Click the + button at the top of the Components tab (make sure that ColdFusion Components is selected, not Web services) to display the wizard (shown in Figure 4). Then:

- In the Components section, define the name (this will be the CFC file name; specify just the name, not the .CFC extension) and the directory. If inheritance is needed, select the component to be inherited from the Extends list.
- In the Functions section, click the + button to define each of your functions (methods). For each you'll be able to specify the name, the access level, the return type, the output flag (which should generally be "false"), and more.
- In the Arguments section, select the functions one at a time, and for each, click + to define the method arguments.

For each argument you'll be able to specify the name, the data type, whether or not it is required, and more.

- When finished, click OK, and Dreamweaver will generate a CFC file based on your selections, save it, and update the ColdFusion Components list so that you can start using the new CFC right away.

This is a really nice feature, and one that few users even know exists.

Cool Feature #4: Debug Output


The last feature I want to share is also a little-known one, and very useful. We all use ColdFusion debug info, that output appended to the end of generated pages (or displays in an associated popup window). We've all gotten used to how that information is presented, but the truth is that the data presentation is far from ideal.

If pages are executed in Dreamweaver (by clicking the Server Debug button), then Dreamweaver grabs that output and displays it in its own tab in the Results panel (as seen in Figure 5). Debug data is cleanly presented in a tree control and the interface is even interactive. Click on a debug entry and the appropriate <CFQUERY> will be located and highlighted in the editor; click on any included file listed in the Template Stack and that file will be opened, and so on.

The data displayed in the Server Debug tag is the same information as is usually displayed at the bottom of generated pages, but the output and interaction is much cleaner, it takes far less space, and does not interfere with generated output at all.

Conclusion

If you've gotten this far, then I have to assume that I have successfully piqued your interest in Dreamweaver. I've only listed my four favorite features. There are others worth looking into too, including amazing CSS support (probably the best in any product on the market); integrated browser validation and compatibility testing; built-in basic image manipulation (via embedded Fireworks technologies); support for secure FTP; and an extensibility layer that's even more capable than that of HomeSite.

If you're a ColdFusion Studio (or HomeSite+) user, don't throw away that tool yet; you'll likely still want to use it. But at the same time, you may want to take another look at Dreamweaver; not only is it now a decent editor, it also boasts features that may actually make you more productive. The best of both worlds, that's a good thing. 

About the Author

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ben@forta.com



Consumer
Products



Music



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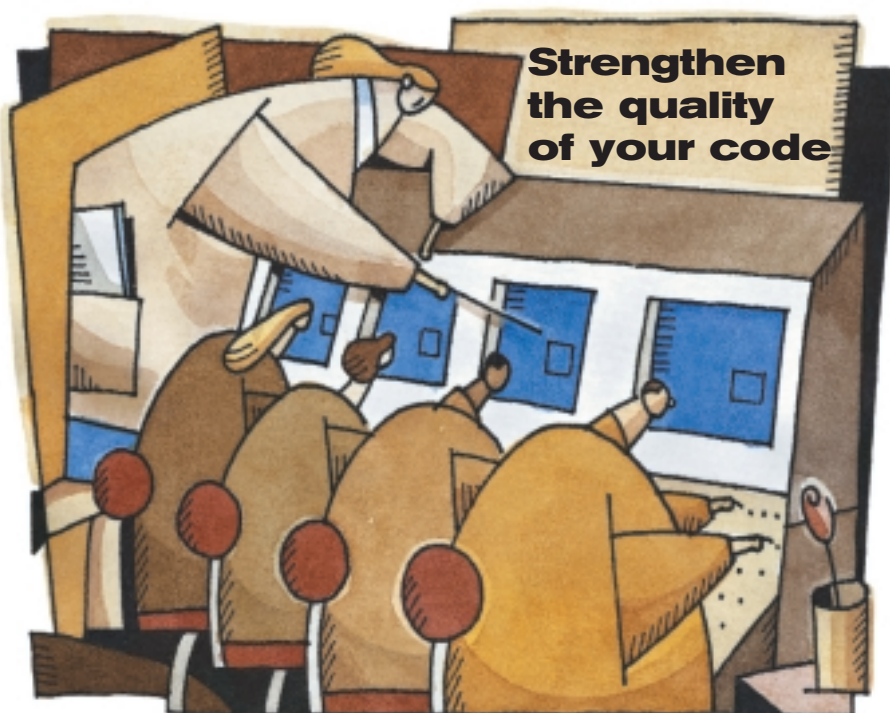
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Announcing Macromedia MX 2004:
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Ramping Up on Flash MX 2004 and ActionScript 2.0

I could not be more excited about the release of Flash MX 2004 and the new ActionScript 2.0. This new version of ActionScript has taken a huge leap in standardizing a more object-oriented programming structure to its syntax and has given the developer the ability to catch many more errors at compile time than in ActionScript 1.0.

For many developers, this advancement will help increase development time and quality of code. Some of the language's feature enhancements include strong data typing, a more standard way of class declarations, inheritance, interfaces, packages, and error handling.

Before I go into the new features of ActionScript 2.0, let's investigate some of the sources to the core classes that get installed. On my computer they are located in [installation dir]/Macromedia Flash MX 2004/First Run/Classes/. Looking at these real-world examples is an invaluable source for research and development. Though I would caution not to change these files, you may even consider doing a backup of this folder first.

The help files that can be accessed from the main menu under "Help" within Flash MX 2004 contain some good information on creating classes, and cover the new language features in an incremental manner. So I did not want to do a rehash of that here. Instead, I want to cover the new adjustments that I needed to make in order to begin coding with the new Flash MX 2004 environment and ActionScript 2.0 language.

Ramping up on the new features and getting comfortable with all of the IDE and language changes was actually a larger task than I expected. In the first place, there are many new ways that you can approach an application in Flash MX 2004. For instance, you can create a Flash Document, Flash Slide Presentation, Flash Form Application, or Flash Project (*note: Flash Slide Presentation, Flash Form Application, and Flash Project are available only in Flash MX Professional 2004*).

The Flash Slide Presentation and Flash Form Application are options that allow you to work on an application that's similar to a Visual Basic IDE, where you would organize your work into logical screens (forms). Although I intend to investigate this new way of developing Flash applications, I did not start here. A Flash Project is a great tool. By creating a Flash Project you attach relevant files, which allows for quick access and organization with external files (see Figure 1). The Flash Document is in Flash MX 2004 and Professional edition and is the most similar to the method used to develop in Flash MX.



By Curtis P. Hermann

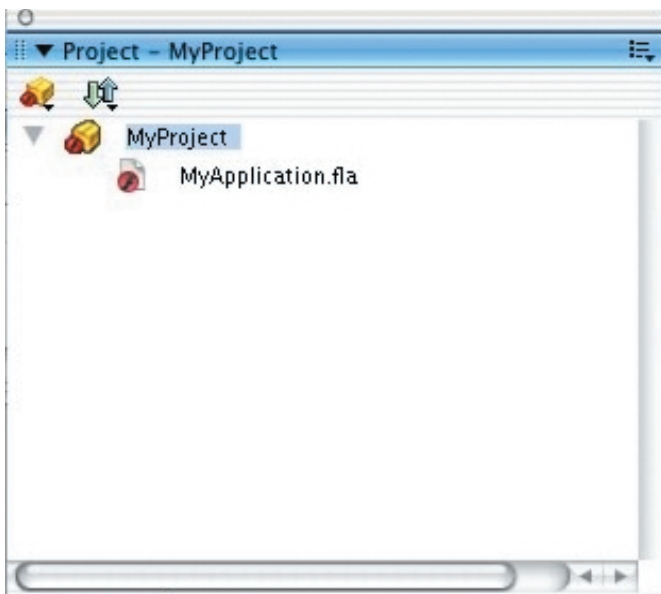


Figure 1: Project Panel is where you'll organize files for your entire Flash MX 2004 application

Before I started my application, I needed to understand some differences between ActionScript 1.0 and 2.0. First, which player supports 2.0? Flash Player 6 and 7 both support ActionScript 2.0, but Flash Player 6 is missing some features like try/catch error handling and others. However, in general, Flash Player 6 supports the core of ActionScript 2.0. This is a good thing, because it will take awhile for general users to upgrade to Flash Player 7 and corporate IT managers to approve a company-wide change.

Next, I began to look at the syntactic differences. The first thing I saw was the strict data typing of variables. Now you can declare variables with a type as follows:

```
[var] variableName:[type]
```

example:

```
// declaring a string variable
var myString:String = "test";
```

```
// declaring a variable from an object I defined
var myObj:MyObject = new MyObject();
```

When declaring variables you start with the keyword "var", then put the variable name followed by a ":" and a type, which is any native data type or a class or interface you have defined. One thing I have left out in this example is the ability to add scope to your variable definition. I will be addressing this topic later in the article.

Strict data typing is a very big change for ActionScript developers, and I am aware that some developers will be adverse to this change, but in the long run, the headaches solved by this new rule will outweigh the effort that was needed to implement it. For example, if you use a variable incorrectly, the compiler tells you. Think about the power of this in the scope of day-to-day development and how much debugging time will be saved. To illustrate, try adding a number and a string (see Figure 2).

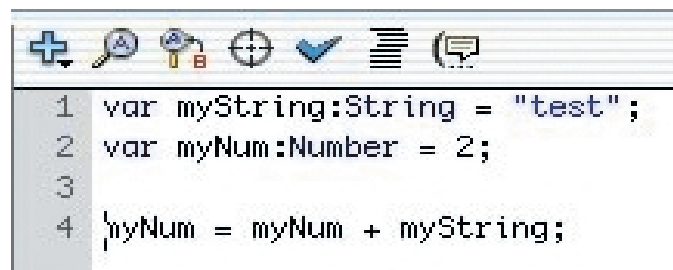


Figure 2: With the new ActionScript 2.0 strict typing, the above code will generate an error

In the previous version of Flash MX, the compiler would continue to compile without warnings or breaking. Now, you'll get the following error:

```
**Error** Scene=Scene 1, layer=Layer 1, frame=1:Line 4: Type mismatch in
assignment statement: found String where Number is required.
    myNum = myNum + myString;
```

Total ActionScript Errors: 1 Reported Errors: 1

This language feature is my number one language enhancement.

The second difference is in the way that classes were defined. Previously in ActionScript 1.0 a class would be defined using the prototype chaining method like this:

```
MyClass = function() {
}
```

Then you would write methods like this:

```
MyClass.prototype.init = function() {
}
```

Now with ActionScript 2.0, classes are defined as follows:

```
class MyClass {
    // methods are defined within the class
    function myMethod() {
    }
}
```

Define your classes in an external file with the .as extension. Each class definition must be in its own file so you have only one class per file. The file name must be the same as the class name (MyClass.as). Also, unless you change the classpath settings in the ActionScript preferences, keep your class files relative to your .fla. You can organize your code into packages by saving the files in subdirectories and declaring the class with the subdirectory path:

```
// package support in ActionScript 2.0
class com.iindwell.MyClass() {

}
```

The path to this file would look like this:

```
[.fla location]/com/iindwell/MyClass.as
```

Once you have defined your class, you can make references to that class by importing and instantiating it. In ActionScript 1.0, I would use the `#include` statement to get references to class definitions. However, in ActionScript 2.0 you'll use `import`.

```
// code contained in SomeOtherClass.as
import com.iindwell.MyClass

class SomeOtherClass {
    function myMethod() {
        var foo:MyClass = new MyClass();
    }
}
```

Without going too deep into object-oriented theory and definitions, I'll list some of the new class features.

Constructor

Classes now have constructors that get called automatically when a class is instantiated. A class constructor must be named the same as the class name.

```
class MyClass {
    function MyClass () {
        // this method will be called automatically when instantiated
    }
}
```

New Scope

Public, Private, and Static variable and method scope will give you much more control over how your variables can be accessed. Public variables and functions are the default scope and allow access to any class that calls it. Private variables and functions allow access only to the class that they are defined in. Here's a Private and Public example:

```
class MyClass {
    private var myString:String; // only to the class that declares or
    defines it, or to subclasses of that class
    public var myNum:Number; // available to any class that calls it
    var myNum2:Number; // by default, instance variables are public by
    just declaring them with var

    function MyClass () {
        // declaring variables within a function keeps them private
        to that method
        var myDate:Date = new Date();
    }
}
```

Static variable and functions are a little more tricky. Static means that it is only declared once and is used by every instance of that class. This means if you set a counter variable as static, and increment it by one in the class constructor, the counter variable will increase every time you create a new instance of that class.

To illustrate the static scope example try the following:

1. Create a Flash document and save it (you can name it whatever you like).
2. In the same directory you saved the Flash document create a file named: `StaticExample.as`
3. In the `StaticExample.as` file put in the following code:

```
class StaticExample {
    static var counter:Number = 0;
    function StaticExample() {
        counter++;
        trace("Number of StaticExample instances = " + counter);
    }
}
```

4. Now in the first frame of your Flash document put in the following code:

```
import StaticExample;

var test1:StaticExample = new StaticExample();
var test2:StaticExample = new StaticExample();
var test3:StaticExample = new StaticExample();
var test4:StaticExample = new StaticExample();
```

5. Run your Flash Document. Your output window will look like this:

```
Number of StaticExample instances = 1
Number of StaticExample instances = 2
Number of StaticExample instances = 3
Number of StaticExample instances = 4
```

Get/Set

Many languages have adopted the practice of setting up "accessor" methods to retrieve and set the values of private variables within a class. Accessor methods are great for hiding the process that is taking place when values are set in a class. When creating a class definition, some of your data may need to be formatted every time the property is set or retrieved, so by not allowing access to the variable that holds the data, and forcing the use of a get/set method, you're guaranteed that property will be formatted as needed.

In ActionScript 2.0 you can currently write accessor methods in two ways. The first (shown in the first example) is the traditional route where you write methods as you would any other method and call the method in the same way as well. The second way (shown in the second example), would be by using the set/get keywords in your method declaration to act as a shortcut when accessing those properties.

First Example (traditional way):

```
var user:User = new User();
user.setName("Curtis");
var username = user.getName();
```

While the class definition of `User` would look like this:

```
class User() {
```

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I've been endlessly amazed by the things our customers have done using our MX generation of products. And with all the new features in Studio MX 2004, it's going to be even easier and faster for them to realize their visions.

Dreamweaver MX 2004 helps you get that picture in your head turned into a web site faster than ever. That should be welcome news to the millions of web professionals who use Dreamweaver to create sites and applications. We've added things like CSS support, target browser check and improved code hinting to help you get through projects in far less time. And with Fireworks MX 2004 you can optimize web graphics up to 85% faster.

The new Flash MX Professional 2004 takes our industry standard tool for building rich content and applications to a whole new level. It really helps stretch your abilities—no matter where you fall on the designer-developer continuum. For development, we've added things like data-aware components and an extensibility layer so you can add your own features. For design, we've added high-quality, long-format video that's really impressive.

These are just a few of the new features. The products are available individually, but they really work well together in Studio MX 2004. Don't take my word for it. Download a free trial and read more at our web site.

Let me know what you dream up. norm_01@macromedia.com



Introducing
Macromedia MX 2004.

www.macromedia.com/go/2004



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```
private var _username:String;

function setUsername(name:String) {
    _username = name;
}
function getUsername():String {
    return _username;
}
}
```

Second Example (new get/set feature):

Here's how it would look using the implicit getting or setting with the get/set feature:

```
var user:User = new User();
user.username = "Curtis";
var username = user.username;
```

New class definition using get / set feature:

```
class User() {
    private var _username:String;

    function set username(name:String) {
        _username = name;
    }
    function get username():String {
        return _username;
    }
}
```

As you can see, with the get/set feature of ActionScript 2.0 you can access your properties by using a shortcut and just typing in the property name that was defined in your get/set method declarations. Depending on your personal preference, this new method can make your code appear to be cleaner and more standardized.

Inheritance

Reusing code is a major goal in software development. Using the extends keyword in a class definition will allow that class to inherit another class's properties and methods. "Inheriting" another class's functionality will save time on development and maintenance fixes. A shopping cart Web site example illustrates the difference between a shopper and an administrator of the Web site.

Both are users, yet they function very differently. Specifically, they both have profiles created in the system that contain a username and password. The shopper has many different properties that contain address and credit card info, while the administrator does not. The administrator user would contain report preferences and access levels to data roles. So, in order to get the best code reuse out of these two types of users we can take the similarities and make a parent object User.

```
class User() {
    private var _username:String;
    private var _password:String;
    function set username(name:String) {
        _username = name;
    }
}
```

```
    }
    function get username():String {
        return username;
    }

    function set password(pass:String) {
        _password = pass;
    }
    function get password():String {
        return _password;
    }
}
```

Then, by extending the User class we can define to subclasses to inherit the User class's properties and methods:

```
class Administrator extends User() {
    // report preference and access code goes here
    ...
}
class Shopper extends User() {
    // address and credit card info goes here
    ...
}
```

Both Shopper and Administrator classes can now be instantiated and have the username and password properties of the User class accessible:

```
var admin = new Administrator();
admin.username = "chermann";
admin.preferredSortOrder = "recent";
var shopper = new Shopper();
shopper.username = "jsmith";
shopper.address = "101 S. Main St.";
```

When extending another class, keep in mind where the class it is extending resides in the classpath. By default, Flash looks at the document-level classpath set for that FLA (located off the main menu preferences/ActionScript (Tab)/ActionScript 2.0 Settings ... (button)). See Figure 3.

Flash will first look in the directory that the compiled .fla is being saved in. If the classpath is not found, then it will look in the global classpath. If the classpath specified is still not found, a compilation error will be generated. If a class needs to extend a class that is in a different package and that parent class's package is in the classpath, just include it in the class definition:

```
class Administrator extends com.iindwell.User() {
    // report preference and access code goes here
    ...
}
```

Don't reinvent the wheel. By extending core classes like MovieClip, Math, Window, etc... you can inherit all the power and add functionality by simply extending the class and creating new properties and methods to suit the needs of your application.

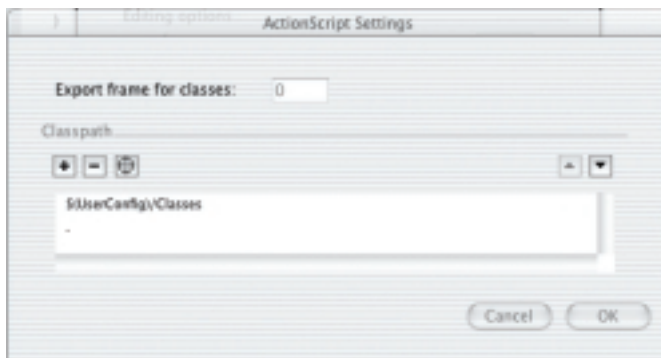


Figure 3: In the ActionScript setting you can adjust the classpath for Flash to look for classes

Interfaces

Interfaces are used to enforce a class definition. An interface acts like a contract to those classes that implement the interface. Basically, an interface defines functions, not the supporting code, that needs to be defined in the implementing class.

You will create an interface like a class in an external .as file and name the file the same as the interface. The interface looks like a class, but will only have skeleton code like this:

```
interface DataScreen {
    function save():Void;
    function refreshData(id:Number);
    function isDirty():Boolean;
}
```

Accordingly, the methods have no supporting code, only a definition. An interface is a way to enforce class definition, instead of an actual class. You implement this definition using the implements keyword in your class to stay compliant to the intended architecture. Consequently, your code must look like this:

```
class UserInputScreen extends MovieClip implements DataScreen {
    function save():Void {
        // save code here
    }
    function refreshData(id:Number) {
        // refresh code here
    }
    function isDirty():Boolean {
        // check to see if data has changed here
    }
}
```

As a result, any screen that implements the interface DataScreen guarantees that the class supports these three methods. The above example applies to many business applications that will have multiple data input screens that are loaded into view and controlled by another object, like a menu bar. The menu bar will expect that any active data-input screen has save, refreshData, and isDirty methods. Generally, any developers on the project, when developing a data-input screen, must implement the DataScreen interface. This is valuable when working on

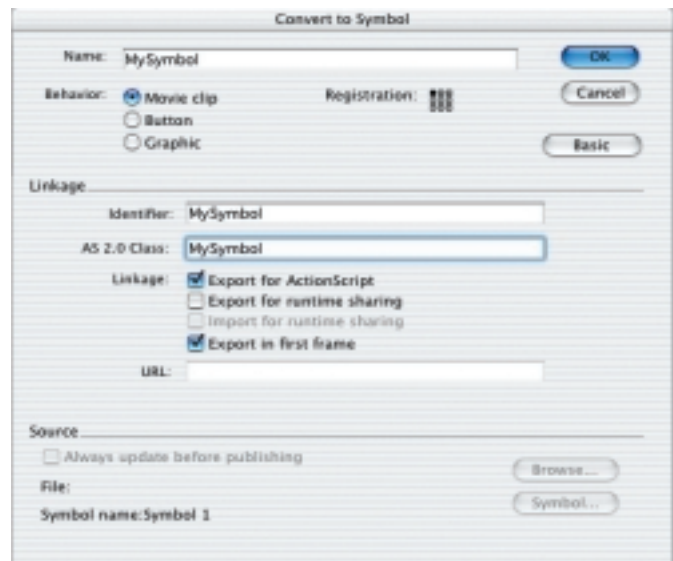


Figure 4: The new AS 2.0 class field in the linkage section allows for a class to be associated with a symbol

large applications or with a team of developers to make sure that every object follows a standard.

Dynamic

Illustrated by the code examples here, ActionScript 2.0 has a strict object-oriented syntax and is not flexible when it comes to breaking the object definition. When using an object in ActionScript 2.0 and attempting to access a property or method that does not exist, an error will occur. This is a good thing. On the other hand, you may encounter a situation where you want to have the flexibility of ActionScript 1.0 and be able to create variables and methods on-the-fly. You can do this by using the dynamic keyword in your class definition.

```
dynamic class MyDynamicClass {
}
}
```

From this point, MyDynamicClass will allow you to create properties and add methods to that class dynamically and any subclass will become dynamic as well. But, by doing this, you are opening yourself up to bugs (e.g., misspelling the intended variable name and referencing it by the correct spelling later in the code will give you two variables in the object, not one) that cannot be detected by the compiler, so keystroke softly.

Moving On

When I develop in Flash, I always keep my source code in external files. Flash MX 2004 really encourages this method. In Flash MX I would include files in the first frame of the movie clip. In contrast, this is not needed anymore. When you create a symbol you have the option of coding all of your ActionScript in an external class file. You must create this file yourself; if you do not, the compiler will generate an error. Flash does not write any code in this file – it's up to you to generate this code. This class file is associated with the symbol in the properties/linkage panel (see Figure 4).

In the AS 2.0 class input field, enter the name of the class. If you have defined the class in a package, then put that path there as well.

```
com.iindwell.symbols.MySymbol
```

Now, when the MySymbol symbol is used, the MySymbol class is instantiated and associated with this symbol.

In the MySymbol class definition you will need to take a couple of preliminary steps before you can start using it. Look at the example class below:

```
class MySymbol extends MovieClip
{
    static var symbolName:String = " MySymbol ";
    static var symbolOwner:Object = MySymbol;
    var className:String = " MySymbol ";
}
```

Flash requires that these three variables be defined in order to create a connection between the symbol and the class. The symbolName variable is pretty straightforward – it's the name of the symbol created in the properties panel for that movie clip. The symbolOwner variable is used internally with the createClassObject() method and should be a fully qualified package path (i.e., MySymbol or com.iindwell.MySymbol) depending on whether or not you defined the class in a package. The className variable is the name of the component class, and will be used with _global.styles as a reference name, i.e., _global.styles[className] (see help files for more info on styles).

Next, to access Flash UI Components, like the Button, TextField, or DateField components, in the class that I have defined and that's associated with the symbol that contains these components, I need to import the class that defines that component, then define a variable in my symbol class to represent that component that's named the same in that symbol. The variable name must be the same name as what I named the component in the properties panel (see Figure 5).

```
import mx.controls.Button;

class MySymbol extends MovieClip
{
    static var symbolName:String = " MySymbol ";
    static var symbolOwner:Object = MySymbol;
    var className:String = " MySymbol ";
    // add a variable definition for every component in your symbol to
    // have a reference in your code. Otherwise you will get a compile error
    // if you reference my_button without a definition.

    //components
    private var my_button:Button;

    // constructor
    function MySymbol() {
        // an example of disabling the button component
        my_button.enabled = false;
    }
}
```

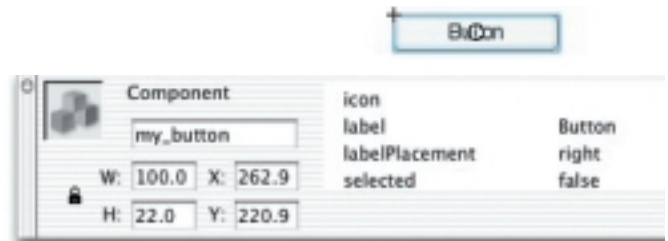


Figure 5: The name of the component shown in the properties window must be defined in your ActionScript class in order to reference it

Event Handling

The last big step to get my development in Flash MX 2004 completed was to figure out how to handle events. In Flash MX, I used AsBroadcaster extensively to broadcast events and organize my listeners. However, ActionScript 2.0 functions differently. Using EventDispatcher is very simple if you're already familiar with AsBroadcaster. If you're not, that's okay; learning event handling with the EventDispatcher class is more flexible and better documented. Below is a class definition using EventDispatcher:

```
import mx.events.EventDispatcher;

class MyEventTestSymbol extends MovieClip {

    static var symbolName:String = " MyEventTestSymbol ";
    static var symbolOwner:Object = MyEventTestSymbol;
    var className:String = " MyEventTestSymbol ";

    // EventDispatcher Functions
    /* these definitions will act as pointers to the functions in
    EventDispatcher and are initialized in the EventDispatcher.initialize()
    method that is called by the MyEventTestSymbol constructor.
    */

    private var dispatchEvent:Function;
    private var addEventListener:Function;
    private var removeEventListener:Function;

    function MyEventTestSymbol () {
        EventDispatcher.initialize(this);
    }

    function testDispatch() {
        // when this method is called, dispatchEvent method is fired raising
        // an event to it's listeners
        dispatchEvent({type:"onMyEventTestSymbol Test", target:this});
    }
}
```

The following is an example of another class listening in on MySymbol events:

```
class MainSymbol extends MovieClip {
```



```

static var symbolName:String = " MainSymbol ";
static var symbolOwner:Object = MainSymbol;
var className:String = " MainSymbol ";

// movie clips

private var mySymbol_mc:MovieClip; // this is the name given to an
instance of MySymbol on the stage

function onLoad() {
    // add an event listener for the onMySymbolTest event, when
    // this event is fired, the local function onMySymbolTest will
    // be called mySymbol_mc.addEventListener("onMySymbolTest ",
    this);
    // call the testDispatch method (this will fire the
    // onMySymbolTest event)
    mySymbol_mc.testDispatch();
}

function onMySymbolTest () {
    // at this point the onMySymbolTest event was fired from the
    // mySymbol_mc instance
    trace("MySymbol distpatch test complete.");
}
}

```

Wrapping Up

Having figured out the core functionality of Flash MX 2004 and ActionScript 2.0, I am prepared to develop applications. The solid ground upon which you will develop your applications will be in understanding how and where to define your variables, classes, and methods. Understanding how to define your variables, classes, and methods and accessing them according to the scope they have been defined is at the root of your application. Having the ability to use advanced language features like inheritance and interfaces are tools that will make you more productive and strengthen the quality of your code. Finally, communicating between objects is essential. Learning how to develop event-driven applications will provide flexibility and power.

In this industry, technology is constantly changing. Fighting change will only stunt your career and job satisfaction. I admit this switch to ActionScript 2.0 has been a challenge, but I have also found it to be a lot of fun. Breaking existing patterns with new technology brings a renewed excitement and exploration. Fortunately, in this industry, if you ever feel the technology has become stale, a new release is always around the corner.



About the Author

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curtis@iindwell.com

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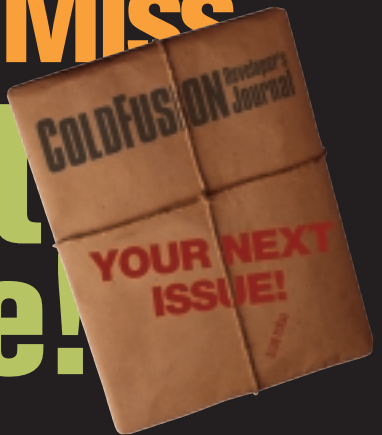


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'Jazz' up Your Applications with Open Source Java

Add spell-check functionality

By now it should be no surprise to hear ColdFusion and Java mentioned in the same sentence. You've probably seen the examples, read the tutorials, and poured over lines of Java code in hope of enhancing your ColdFusion applications. Either that, or you've filed the information in a "nice to know" vault and continued on with your ordinary development habits. No matter which category you fall into, this article is for you.

One of the greatest benefits of ColdFusion and Java integration is being able to rely on Java's immense open source community to enhance your ColdFusion applications. So, chances are, whatever you're looking for has already been built in Java – just waiting to be leveraged in your ColdFusion code. No idea how to integrate the two? Not a problem – this article is here to help. With a little bit of coding, I'll show you how to leverage an open source Java spell-checking engine in your ColdFusion applications. Let's see... Java. Open source. Spell checking. *Free*. Do I have your attention yet?

Scoping out the Playing Field

The first step to solving any problem is describing what the problem is. In my case, I needed a way to add spell-check functionality to a ColdFusion application on a very low budget. After doing a bit of searching I found some ColdFusion custom tags that would probably get the job done, but didn't have the bones to pony up for any of them. With some Java experience under my belt, I decided to try a different approach to the problem. Enter the open source community previously mentioned.



By Darron Schall

One search on Google for "open source Java spell check" yielded approximately 65,000 results, with the very first result showing promise. I followed the link and discovered "Jazzy," hosted on SourceForge (sourceforge.net). The first two sentences on the project page caught my attention: "There are currently no Java open source spell checkers. This is a project that seeks to remedy that." Sweet. I snagged the source and documentation and got down to business.

Preparing Your Development Environment

Before I describe how I got Jazzy to play nice with ColdFusion, here's the usual list of everything you'll need to follow along. If you've done Java development before, then your computer is probably already prepared. If not, it's download time.

- The Java 2 SDK. You can find J2SE downloads at <http://java.sun.com/j2se/downloads.html>, under the "Download" heading. After clicking through on the latest version (1.4.2 at the time of this writing), you will be presented with a myriad of download options. Under a heading such as "Download J2SE v 1.4.2_02," find the right version for your operating system and click the "download" link under the SDK column. You'll have to accept a license before downloading and installing the software. If you have trouble installing the Java 1.4.2 SDK you can visit <http://java.sun.com/j2se/1.4.2/install.html> for installation help.



- Once the Java 2 SDK is installed, Eclipse is next on the download list. Eclipse is a fantastic IDE available as a free download at www.eclipse.org/downloads/index.php. The latest release is version 2.1.2. After clicking through on a download site, click on the version number, then look for the Eclipse SDK download that best fits your system. On Windows, there is no setup program to run – just extract the zip file for your preferred installation location. I extracted mine to c: to have the program installed in c:\eclipse. You'll need to run c:\eclipse\eclipse.exe once extracted to finalize the installation.

(Note that you don't need Eclipse to develop in Java. You can use a simple text editor and the command-line Java compiler if you like. However, I'll be using Eclipse for all of the Java coding required, so you'll need to download it if you want to follow along. For a listing of Java IDEs, their popularity, and a brief description about each one, check out the voting for *Java Developer's Journal's* Best Java IDE of 2003 at www.sys-con.com/java/readerschoice2003/live-update.cfm?BType=9. Eclipse is my personal favorite because it's open source, has an active development community, is backed by 30 major software vendors, is relatively easy to use, and is very feature rich.)

- You'll need access to a ColdFusion MX 6.1 server. I have the developer version installed locally, using IIS 5 as the Web server. Although the Web server isn't important in this article, it's very important that you're using ColdFusion MX 6.1. The 6.1 release fixes a bug where `java.lang.IllegalAccess` Exception would be thrown when trying to access certain public methods in Java classes. Samuel Neff mentioned this at www.rewindlife.com/archives/000049.cfm. You can find ColdFusion MX 6.1 at www.macromedia.com/software/coldfusion/.
- You'll also need the Jazzy source and documentation. The binary release isn't necessary since we'll be building from the source code. The latest version at the time of this writing is .5, and you can find the downloads on the Jazzy

SourceForge project page at <http://sourceforge.net/projects/jazzy>. For now, just save the .zip files somewhere; we'll worry about extracting them later.

- Finally, you'll need a dictionary file. A dictionary file is a one word per line, case-sensitive alphabetical listing of correctly spelled words that you want the spell checker to validate against. In case-sensitive alphabetical order, all words beginning with a capital letter come before those beginning with a lowercase (Zimbabwe would come before aardvark). The reason is that the ASCII values for uppercase letters are numerically lower than the ASCII values for lowercase letters. Again, the Jazzy Project page is where a sample dictionary can be downloaded from. There are actually two dictionaries listed, but you'll only need to download `english.0.zip` – just save the .zip archive to disk since we'll be extracting it later.

Running the Example

Now that we have everything we need and the development environment is set up, it's time to figure out how Jazzy works so we can integrate it in our ColdFusion code.

Fire up the Eclipse IDE, and create a new project by selecting File -> New -> Project. Select "Java" and press the next button. Give the project a name of "CFSpellCheck" and make note of where the project directory is created. On Windows, the default location will be a directory with the same name as the project, off of the "workspace" directory under wherever you

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chose to unzip Eclipse to. In this example, that directory is "C:\eclipse\workspace\CFSpellCheck." Press the finish button to create the project. After pressing finish, you may get prompted by Eclipse to switch to the Java Perspective. If so, click yes.

Now that the project is created we can get to work with the Jazzy source code. Extract the jazzy-doc.zip and jazzy-src.zip archives to a temporary directory. Copy everything under the "src" directory (a .java file and the "com" directory) to the project directory that we just created. Don't be surprised to see a ".project" and a ".classpath" file in the project directory – those are created by default when Eclipse creates the project.

Next, make a "dict" directory under the project directory, and extract english.0.zip to it. Right-click on the project name in the "Package Explorer" in Eclipse, and select "Refresh" from the menu to update the project.

With the source code in place, we can build their examples. Expand "com.swabunga.spell.examples" and double-click the SpellCheckExample.java file. From the menubar, select Run -> Run As -> Java Application. When you run the example, you'll notice that the "Console" panel in Eclipse contains an error that occurred while trying to run the program. The very first line of the error ("java.io.FileNotFoundException: dict\phonet.en") indicates that the program is looking for "phonet.en" in the "dict" directory. Doh!

Now, before you get mad at me for showing you an example that doesn't work, I did this on purpose. Whenever you're trying something like this, there's no guarantee that it's going to work the first time. I wanted you to experience a problem right away so that when something does go wrong for you, you don't get frustrated. Open source is great, but it does have its pitfalls. If you find yourself running into trouble, ask around on mailing lists, forums, newsgroups, or try search engines.

Speaking of search engines... Google to the rescue again! When we search for "phonet.en" only a few links come up, but thankfully they're all associated with Jazzy. Visit <http://cvs.sourceforge.net/viewcvs.py/jazzy/jazzy/dict/phonet.en> and click on the download link next to the "Revision 1.1" heading. Make a new text document named "phonet.en" in the "dict" subdirectory under your project directory, copy and paste the text from the previous link into that file, then run the example again.

With the program now running successfully, we're prompted to enter some text to spell check. I purposely entered text with spelling errors and was pleasantly surprised when the program found a misspelled word and offered the correct spelling as a suggestion. Try it for yourself! Everyone loves the "Hello world" example, so go ahead and spell that wrong to see if the program will correct it for you.

Awesome, it works... now, to dig in and figure out how to get this to work with ColdFusion.

Understanding Jazzy's Innards

The best place to look for help is the documentation and source code, and we have access to both in this case. At the very least, you'll always have access to source code when dealing with open source projects. Since we have an example program running successfully and we're still looking at the code, let's start there.

But wait... before we start, what are we even looking for? Because we need to use a Java object in ColdFusion, we're looking for a class with methods like setText, setDictionary, and runSpellCheck or checkSpelling. We'll also need a way to get the spelling error information from Jazzy to ColdFusion. This information would include the misspelled word, the list of suggested spellings, and the string position where the spelling error was detected, so we need a method along the lines of getErrors or getSpellingMistakes.

Before going any further, make sure that line numbers are

being displayed inside of Eclipse. This can be accomplished by selecting "Window" from the menu bar and clicking on "Preferences." Expand "Java" on the left, then click "Editor." Find the "Show line numbers" check box, then hit "Apply." Click "OK" to close the dialog.

Looking at SpellCheckExample.java we don't see any of the methods

we're looking for. However, at line 30 we can see the dictionary being created with the dictionary and phonet files. Line 42 is the checkSpelling call that invokes the spell-checking engine with the text to check as a parameter. At line 49 we see a possible bottleneck. Whenever a spelling error occurs, an event is raised and the spellingError method handles it. This is great for allowing the user to fix mistakes as they arise in a Java application, but that level of interactivity won't work in a ColdFusion application since all of the processing completes on the server before the client gets a chance to interact with the application. We'll have to create a workaround for that.

With a little insight into how Jazzy works, we can take a look at the documentation provided to see if any other classes have the desired methods. Ideally, we just want to create a Java object and use it without having to do any additional coding. Find the index.html in the temporary directory you extracted the jazzy-doc.zip to, and open it up in a Web browser.

What you're looking at is documentation generated automatically by JavaDoc. If you're not sure what JavaDoc is, check it out on Sun's Web site at <http://java.sun.com/j2se/javadoc/>. The left-hand column is a listing of all of the classes associated with Jazzy. When you click on a class name you'll see a listing of all of the methods available in that class. Now is a good time to click around and see what you find, and at the same time,

"One of the greatest benefits of ColdFusion and Java integration is being able to rely on Java's immense open source community to enhance your ColdFusion applications"

familiarize yourself with JavaDoc style documentation if you've never seen it before.

What you're looking for specifically are public methods. ColdFusion is not allowed to call private or protected methods in a Java class – these methods are internal to the class that defines them and are not intended to be used by developers using the class. If you see the static keyword, it means that you don't need an instance of the class to call the method. You can create the Java object in ColdFusion and use the method right away, without initializing it.

After looking around some, it doesn't look like there's a class that will do what we want, so we'll have to just go ahead and make one!

Writing a Java Wrapper for Jazzy

The first thing we need to do is make a new class that we can instantiate via ColdFusion. In Eclipse, right-click on the project name (CFSpellCheck) and select New -> Class. In the name field, enter "CFSpellCheck," and enter "com.sys_con.ColdFusion" in the package field. We use an underscore in place of a dash in "sys-con" because the dash in Java has special meaning (in this case, it would be the subtraction operator). A package, simply put, is a group of related classes that has the added benefit of eliminating name collisions. For more information on packages check out <http://java.sun.com/docs/books/tutorial/java/interpack/packages.html>. I always use the "com.darronschall" prefix when creating packages since that is my domain name, which is unique to me and

identifies me as the author.

Click "Finish" to create the class and accept the default values Eclipse provides. Copy the code in Listing 1 into the file that was just created. (Code examples for this article can be downloaded from www.sys-con.com/coldfusion/sourcecode/cfm.) Select Run -> Run As -> Java Application to see the wrapper in action. Inside the main method beginning on line 71, you can see that we first create a new CFSpellCheck object, set the dictionary, set the text, run the spell check, and then get the errors. This is the same flow that we'll have when we use CFSpellCheck in our ColdFusion code.

It is not my intent to explain every single line of code in the Java wrapper. However, I do want to highlight some of the more interesting aspects.

I've omitted the phonet file for the sake of simplicity and brevity. There is only an option to specify a dictionary file, with a setDictionary method that's defined starting on line 59. The file name is passed into the method as a string, and a dictionary is created by the file. If any error occurs during the dictionary creation process, the error is just dumped to the screen.

The checkSpelling method on line 38 is where most of the magic happens. I've created an automated event handler for spelling errors. Whenever a spelling mistake is encountered, the word, position, and all of its suggestions are saved into an array. In order to save that information, I needed to create a data type to hold that data.

There is no "StructNew" command in Java that I could leverage to create a container for the data, so I had to create a



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container on my own. This called for another class to be created with private variables to store the data and methods to manipulate those variables. Because I only want to use this class as a data type inside of the CFSpellCheck class, I defined it as an “inner class” by using the class keyword inside of a class and marked it as “private” to restrict access so that only CFSpellCheck can use it. The private inner class SpellingError starts on line 82 and will save the word, the position, and the list of suggestions for the word. A toString method in the SpellingError class is defined starting on line 113 that will return a string containing the values inside of a SpellingError variable, useful for debugging purposes.

As you can see, there really isn't a lot to the wrapper class, and it should be fairly straightforward and easy to understand.

The next step is invoking the wrapper from our ColdFusion application. Before doing this, we can go ahead and comment out the main method since it's no longer needed. This can be accomplished by using Java's multi-line comment operators. Place a “/*” on line 71 before the “public” keyword. At line 80, after the closing curly brace, place a “*/” to mark the end of the comment. We can also comment out the informational messages generated by lines 43 and 50. To comment out a single line, use Java's single-line comment operator, two forward slashes in a row. Before the word “System” place a “//” there to mark the line as a comment so that the Java compiler ignores the line. By default, you should see the line turn green inside Eclipse. Finally, we'll need to export our project.

There are two ways to export the project. One is to bundle everything in a .jar file (Java Archive). The other is the manual process of copying all of the .class files to the directory we want to deploy from. Creating a .jar file is the easier and more elegant of the two approaches, so I'll be taking that approach. The latter approach makes missing a file easy, and requires multiple files to be shuffled around. The .jar file is a single file containing all of the required .class files for project deployment.

To create a .jar in Eclipse, first make sure the CFSpellCheck.java file has been saved. Then, right-click on the project name in the Package Explorer. Select “Export” from the menu. Select “JAR File” from the dialog and then click the “Next” button. Uncheck all of the files on the right-hand side (.project, .classpath, and possibly CFSpellCheck.jar) as they will not be needed for deployment. Click “Browse” to choose a location where the .jar file will be created, and then click “Finish” to create the .jar file.

We're now ready for the ColdFusion side of things... finally!

Calling the Java Wrapper from ColdFusion

In order to invoke the CFSpellCheck class from ColdFusion, the ColdFusion server itself needs to know where to look for it. This information can be controlled in the ColdFusion

Administrator. Log in to the ColdFusion Administrator and select “Java and JVM” from the menu. In the classpath field we can specify where ColdFusion will look for classes. I usually make a directory called “JavaClasses” on the Web server, and add “C:\JavaClasses” to the classpath.

Once the classpath has been saved, you'll need to restart the ColdFusion service for the changes to take effect. After doing this, copy the .jar file to the “JavaClasses” directory. Additionally, you'll need to copy the “english.0” dictionary file to a directory on your Web server. I just copied the “dict” directory under the Eclipse project directory to “C:\JavaClasses” as well.

If you're using the J2EE version of ColdFusion MX, the easiest way to make the .jar file accessible is to either copy it to the “lib” directory for your application server or for the particular instance you want to make it available to in a multiple instances environment. To make the .jar available to all instances in JRun, this would be the {JRun install directory}\lib directory. To make the .jar available to one particular instance, create a “lib” directory off of the {JRun install directory}\servers\{instance name}\SERVER-INF directory and

put the .jar file there. Either approach requires that you stop and restart any application server instance that will use the spell checker. The “english.0” file can be copied along with the .jar or can be put in any other directory on the server, as you specify the path to this file in the Java code.

Now that the classpath is set up and the .jar file and dictionary file are in place,

we can start using the CFSpellCheck class in our applications. The ColdFusion code is shown in Listing 2.

This example is about as simple as they come. A form is presented to the user that, when submitted, runs the text in the textarea through the spell checker. If any errors are encountered they're just dumped to the screen.

In the example, take note of the path to the dictionary. I'm using an absolute path from the C: drive and using forward slashes to separate the directories. This is standard Java syntax for defining directory paths. If you get a “dictionary must be non-null” error it means that the path to the dictionary file is not correct and the specified dictionary file could not be found. Also, note how similar the ColdFusion code looks to the main method we commented out in the CFSpellCheck class. Interesting, no?

Now that we've got the spell checker working successfully... what's next?

Where We Go from Here

There are only a few things that I have in mind to enhance the CFSpellCheck class. I'd like to add in the ability to specify a phonet file for more accurate spell checking, and I'd like to be able to let users add words to the dictionary. Multilingual

“Integrating Java and ColdFusion may be easier and require less coding than you expect”

support would be a nice addition, as well as being able to specify some spell-checking flags to ignore uppercase words, words with numbers, and Internet addresses.

Other than that, the only feature I have in mind can be implemented in client-side code via JavaScript and doesn't involve modification to the Java class.

This feature would be popping up a "spelling error" dialog with options for replace, ignore, replace all, and ignore all, which would give users the level of interactivity that they have probably come to expect when spell checking text.

If you're wondering what else you can do with Java, here are three different project ideas:

- Leverage JasperReports, a report generating library found at <http://jasperreports.sourceforge.net/> for your reporting needs.
- Use Struts-Menu to create some slick menus for your ColdFusion applications. Struts-Menu can be found at <http://struts-menu.sourceforge.net/>. Their Web site contains some very cool demos.
- Build .swf files dynamically on the server with JavaSWF. You can find JavaSWF at www.anotherbigidea.com/javaswf/.

Conclusion


The open source Java community presents many possibilities for ColdFusion developers. Integrating Java and ColdFusion may be easier and require less coding than you expect. In this article, I showed you how to leverage an open source Java spell checker named Jazzy by writing a small wrap-

per class that exposed the key methods necessary for spell checking.

I also showed you how to call this wrapper from ColdFusion to enable spell checking in your applications. I hope that I've gotten you excited at the possibilities of leveraging Java in ColdFusion and that the information presented in the article shows you the necessary steps that lead to success.

Resources

Here are some links with useful information related to Java, ColdFusion, or both.

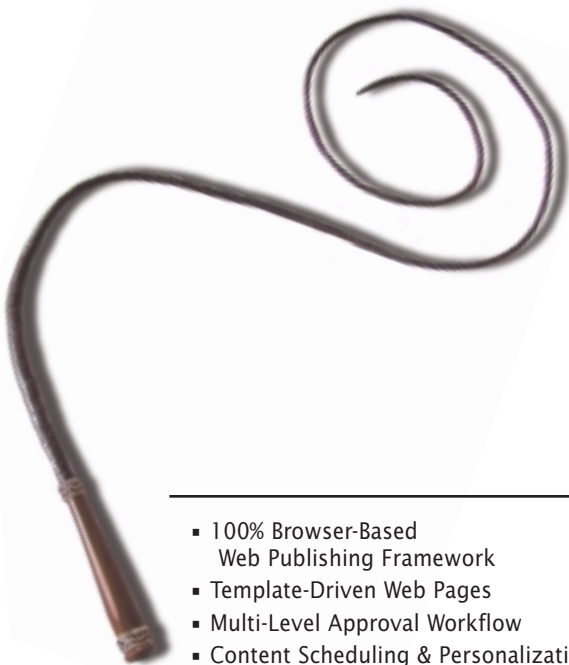
- **The Java Tutorial:** <http://java.sun.com/docs/books/tutorial/index.html>
- **Calling Java Objects from ColdFusion:** www.intermedia.net/support/coldfusion/cfdocs/DevelopingColdFusionApplications/cfobject8.html
- **Java projects on SourceForge:** <http://sourceforge.net/search/?words=java> 

About the Author

Darron Schall is an application developer interested in all things programming, from ActionScript to XML and everything in between. He is a recent computer science graduate from Lehigh University, and maintains a Flash-related weblog at www.darronschall.com.

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Listing 1

```
package com.sys_con.ColdFusion;
```

```
import java.io.File;
import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;
```

```
import com.swabunga.spell.engine.SpellDictionary;
import com.swabunga.spell.engine.SpellDictionaryHashMap;
import com.swabunga.spell.event.SpellCheckEvent;
import com.swabunga.spell.event.SpellCheckListener;
import com.swabunga.spell.event.SpellChecker;
import com.swabunga.spell.event.StringWordTokenizer;
```

```
/**
 * @author Darron Schall (darron@darronschall.com)
 */
public class CFSpellCheck {

    private SpellDictionary dictionary;
    private SpellChecker spellChecker;
    private ArrayList errors;
    private String textToCheck;

    public CFSpellCheck() {
        errors = new ArrayList();
    }

    public ArrayList getErrors() {
        return errors;
    }

    public String getText() {
        return textToCheck;
    }

    public void checkSpelling() {
        spellChecker = new SpellChecker(dictionary);
        spellChecker.addSpellCheckListener(new SpellCheckListener() {
            public void spellingError(SpellCheckEvent event) {
                SpellingError s = new
                    SpellingError(event.getInvalidWord(),
                        event.getWordContextPosition());
                System.out.println("SpellingError - " +
                    event.getInvalidWord() + " at position " +
                    event.getWordContextPosition());

                List suggestions = event.getSuggestions();
                Iterator suggestedWord = suggestions.iterator();
                while (suggestedWord.hasNext()) {
                    String suggestion =
                        suggestedWord.next().toString();
                    s.addSuggestion(suggestion);
                    System.out.println(suggestion);
                }

                errors.add(s);
            }
        });
        spellChecker.checkSpelling(new
            StringWordTokenizer(textToCheck));
    }
}
```

```
public void setDictionary(String dictFile) {
    try {
        dictionary = new SpellDictionaryHashMap(new
            File(dictFile));
    } catch (Exception e) {
        e.printStackTrace();
    }
}

public void setText(String txt) {
    textToCheck = txt;
}

public static void main(String args[]) {
    CFSpellCheck spellcheck = new CFSpellCheck();
    spellcheck.setDictionary("dict/english.0");
    spellcheck.setText("This is some text that needs
        speel checkin");
    System.out.println(spellcheck.getText());
    spellcheck.checkSpelling();
    System.out.println("... done!");

    System.out.println(spellcheck.getErrors());
}

private class SpellingError {
    private String word;
    private int position;
    private ArrayList suggestions;

    public SpellingError(String word, int position) {
        init(word, position);
    }

    public void init(String word, int position) {
        this.word = word;
        this.position = position;
        suggestions = new ArrayList();
    }

    public void addSuggestion(String suggestedWord) {
        suggestions.add(suggestedWord);
    }

    public String getWord() {
        return word;
    }

    public int getPosition() {
        return position;
    }

    public ArrayList getSuggestions() {
        return suggestions;
    }

    public String toString() {
        return "word:" + word + " | position:" + position +
            " | suggestions: " + suggestions;
    }
}
```

Listing 2

```
<html>
<head>
<title>CFSpellCheck example</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
</head>

<body>

<br />

<cfscript>
    if (StructKeyExists(form, "checkText")) {

        CFSpellCheck = CreateObject("java",
            "com.sys_con.ColdFusion.CFSpellCheck");
        CFSpellCheck.init();
        CFSpellCheck.setDictionary("C:/JavaClasses/dict/english.0");
        CFSpellCheck.setText(form.checkText);
        CFSpellCheck.checkSpelling();

        errors = CFSpellCheck.getErrors();

        if (ArrayLen(errors)) {
            WriteOutput("<b>Errors:</b> <br />");

            for (i = 1; i lte ArrayLen(errors); i = i + 1) {
                WriteOutput("word: " & errors[i].getWord()
                    & "<br />");
                WriteOutput("position: " &
```

```
errors[i].getPosition() & "<br />");
                WriteOutput("suggestions: ");
                suggestions = errors[i].getSuggestions();
                for (j = 1; j lte ArrayLen(suggestions); j
                    = j + 1) {
                    WriteOutput(suggestions[j] &
                        "<br />");
                }
                WriteOutput("<hr />");
            }
        } else {
            WriteOutput("No errors found! <hr />");
        }
    } else {
        form.checkText = "";
    }
}
</cfscript>

<form action="index.cfm" method="post">
<textarea name="checkText" rows="4"
cols="40"><cfoutput>#form.checkText#</cfoutput></textarea>
<input type="submit" value="Check Spelling" />
</form>

</body>
</html>
```

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The Benefits of Well-Written Software

Make excellence a habit

Mae West, the indomitable actress/comedienne of the 1930s and '40s, left us with some unforgettable quotes. She gave us such lines as, "When caught between two evils, I generally pick the one I've never tried before," and "Too much of a good thing...can be wonderful." She also offered the ironic observation that "Virtue is its own reward."

It does seem that way at times, even for software developers. During the heyday of the "dot-com boom," signing bonuses were being passed out for anyone who could spell "HTML" and the benefits of well-written software were passed over in favor of "speed-to-market." But perhaps virtue does offer more than Ms. West thought. Where are the dot coms today that embodied such questionable values? Maybe virtue is more like a slowly ripening fruit.

We often associate virtue with noble acts – or at least with the avoidance of ignoble ones. But virtue has a more ancient meaning – one associated with strength, courage, and excellence. As software developers, these are values that are very germane to writing excellent code.

But with virtue comes temptation. Given a software project, there's both an easier and a harder approach. The easy way is to design/code/plan simultaneously. The slogan for this approach might have been taken from a popular ad campaign: "Just Do It." In this approach, we decide what the requirements are and then start coding. We'll know where we're going when we get there.

The harder way is to design software according to sound software engineering practices. Doesn't sound nearly as exciting as jumping into code, does it? Such an approach relies on us knowing what good practices are and how to implement them, and this is seldom a simple task.

Before you dismiss the first approach as something no self-respecting developer would use, consider the pressures from clients and managers to adopt it. Clients want the job done yesterday. There's no time to plan: we have to get coding! And for many managers, a developer who isn't coding isn't working. Then, there may be pressure from within: coding makes us feel like we're being productive. Planning is often frustratingly slow, with nothing but a few diagrams to show for it.



By Hal Helms

Worse, there's often very little apparent difference at the moment the software is deployed. In both cases (hopefully!), the code "works." But the difference between good and shoddy workmanship reveals itself over time. Whether the job is plumbing or programming, poor workmanship springs leaks. Yes, the code may work now, but how adaptive will it be to the changes that are inevitable? To the maintenance that consumes, on average, 70–90% of the cost of software over its lifespan?

Most of us do maintenance programming even though in most cases, it is not the favorite aspect of our jobs. For all but the most trivial of changes, there's usually a great deal of studying of existing code to be done before we can integrate the new functionality with the current program. Often the change seems simple to the client and manager, who remain blissfully unaware of how that change will affect the rest of the program.

Unfortunately, we're often unaware, too. Existing software is like the ancient Gordian knot – an intractable knot that an oracle decreed would be loosed by the person who would rule over all of Asia. Everyone who tried the knot failed – until Alexander the Great. Studying the problem, Alexander unsheathed his sword and "loosed" it by hewing it in two. After solving that problem, Alexander went on to rule Asia and is considered by some to be the greatest military commander of all time. That's all well and good, but Alexander never had to write software...

The way out of the problem of maintaining software doesn't lie in a sword, but in following proven software principles. I was

recently re-reading *The Pragmatic Programmer* by Andy Hunt and Dave Thomas, and was struck by their discussion of what they term "orthogonality." The term is borrowed from geometry, where two lines are said to be "orthogonal" if they meet at right angles. Andy and Dave explain: "In vector terms, the two lines are independent. Move along one of the lines and your position projected onto the other doesn't change."

Applied to software, orthogonality means that one module is independent of another so that you can

make a change to one module without making a change to the other. The term, orthogonality, is original to the book, but the ideas are not: they express the twin virtues of tight cohesion and loose coupling found in good software engineering practices. Components that cohere are highly focused. They have a well-defined sphere of responsibility. Components that are loosely coupled do not need to know about other components to do their work.



While the absolute realization of these virtues is probably beyond possibility, even an imperfect implementation provides considerable benefits. Orthogonal components lead to greater productivity:

1. Code for orthogonal components is easier to write and test. Because the component is largely self-contained, component code doesn't need to be concerned about how other components will be affected by its internal implementation. All that is required is a clear, consistent interface to the component.
2. The chance for reuse is much higher in orthogonal code. As the functionality of a piece of code increases, the chances for it to be useful to another application decreases. Orthogonal components = simpler components = more code reuse.
3. Developers can more easily divide responsibility for separate pieces of a project. These pieces can then be given to other developers or teams of developers. With dependencies reduced and the nature of each module well-specified, developers are freer to write their own pieces of the application on their own. This leads to a decrease in the amount of formal communication (read "meetings") needed to keep the project coordinated.

Orthogonal components lead to decreased risk:


1. Code that is found to be faulty is isolated to a single component, decreasing the chances that bad code will have an infecting influence on the entire application.
2. Changes to the requirements of an application over time are a foregone conclusion. But often small changes are confined to a single module while large changes may occasion an entirely new module. In either case, the risk of introducing a bug while adding a feature declines.
3. The chance that all software will be thoroughly tested is greater with orthogonal code. Trying to test an entire system full of dependencies is a daunting task, so daunting, in fact, that full testing is often omitted. With small, discrete components, testing is much easier to do and, therefore, more likely to be done.

All this talk of the benefits of orthogonal code does not, unfortunately, get us any closer to the goal of ensuring that our code is orthogonal. Nor will good intentions alone bring us to the mark. One thing that will help, though, is the faithful implementation of an application framework that is built to support the twin goals of tight cohesion and loose coupling. Fortunately, we have two such frameworks in

Fusebox 4 (www.fusebox.org) and Mach-II (www.mach-ii.com).

Both frameworks will support and encourage you to write orthogonal code, though in different ways. Fusebox was written for procedural programming while Mach-II supports object-oriented programming. Ah, but surely OO is better? Consider this quote from *The Pragmatic Programmer*: "Object technology can provide a more orthogonal system, but because it has more features to abuse, it is actually easier to create a nonorthogonal system using objects than it is using a procedural language.... While you can always write 'spaghetti code' in a procedural language, object-oriented languages used poorly can add meatballs to your spaghetti." No matter how venerable the buzzword, it seems there is no escape from the need for a deep understanding.

When speaking at user groups and conferences, I usually run into someone who tells me confidently that the code he or she writes is superior to Fusebox, Mach-II, or any other system. Often they think this will provoke a reaction. It does: "I wouldn't be surprised at all if your code is tighter or better performing," I tell them quite sincerely. When they appear surprised, I explain that creating a software application is something very different from creating a system for developing software applications. "Can you grill a better burger than McDonald's?" I ask them. Most of the time, they assure me they can. "Me, too," I tell them. "But what I can't do is create a better system than McDonald's has for predictably, repeatedly producing burger after burger that meets its specifications."

To have predictable, repeatable software successes, we need to understand and implement the principles of good software engineering. Tight cohesion and loose coupling – orthogonality – are two of the most important of these virtues. Learning how to properly implement these virtues is the work of a lifetime. I began this article with a quote on virtue from Mae West. I'll end it with this one from Aristotle: "Excellence is an art won by training and habituation. We do not act rightly because we have virtue or excellence, but we rather have those because we have acted rightly. We are what we repeatedly do. Excellence, then, is not an act but a habit." 

About the Author

Hal Helms (www.halhelms.com) is a Team Macromedia member who provides both on-site and remote training in ColdFusion, Java, and Fusebox. Hal is cofounder of the Mach-II project.

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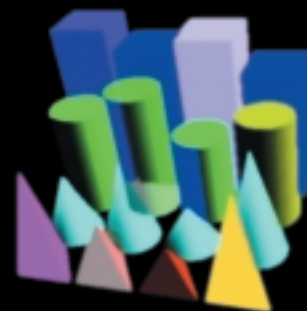
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Integrating log4j and CFMX

An open source Java project gives developers new capabilities

Unless you've never developed a Web application, or for that matter, an application of any size, you've undoubtedly encountered a situation where the application wasn't doing what it was doing when you developed it ("It worked fine for me!") or when it was tested ("I swear we tested this!").

The application might be slow, it could be throwing a SQL error, or maybe a form submission is causing your application to throw an error. Usually it's an end user that reports this information to you and usually you'd like way more information than what you're getting over the phone, through e-mail, or through your help-desk system. To get more information, you may have at some point injected code into your production application that output data to the browser or wrote data to a text file. It might have been something as simple as using the `<cfoutput>` tag to show a SQL query, a `<cfdump>` to show a data structure, or maybe you looked at `cfstat` and `perfmon`. If you're using ColdFusion 5 or greater, you might have used the `<cflog>` tag to log data to a file.

All of these solutions, while simple, have their disadvantages. Injecting debugging code into a production application is error prone and may be impossible (sometimes developers aren't given access to the production application). If you wrote a custom tag or used the `<cflog>` tag, the debugging code is always on, which means that your log files could (and probably will) grow to be unmanageably large and probably unusable. (Technically it is possible to turn off the `<cflog>` tag by using security sandboxes in ColdFusion MX. To do this, browse to the "Sandbox Security" page in ColdFusion Administrator. Then you must create a security sandbox for the directory that you want to disable `<cflog>` for. Finally, edit the sandbox you created and disable the `<cflog>` tag by moving it from the left-hand select box to the right-hand select box. You must then restart ColdFusion MX for your change to take place.)

Wouldn't it be nice to be able to leave logging code in your application and then be able to change the granularity at runtime? If you agree, read on!

Log4j is an open source Java project that gives the developer the ability to control which log statements are output with arbitrary granularity. It is fully configurable at runtime using external configuration files and most important, it can be utilized within



By Aaron Johnson

ColdFusion. In this article, I'll introduce you to the basics of log4j; show examples of how log4j can be used within ColdFusion; talk about some tips and tricks; and point you to further resources for developing applications with log4j.

This article is not intended to be an in-depth introduction to log4j. There are numerous tutorials available on the Web, some of which are highlighted at the end of this article.

Before getting started, you'll need to make sure that you have appropriately configured your system:

- ColdFusion MX must be installed. You'll see that I'm using the ColdFusion MX Enterprise integrated Web server running on port 8300 throughout the examples. Note that while log4j can probably be utilized by versions of ColdFusion prior to MX, I will not be providing examples or configuration tips for those versions.
- You'll need to confirm that the log4j JAR file exists in your ColdFusion installation. On most systems, log4j will exist in either `{%run4_install%}servers\cfusion\cfusion-ear\cfusion-war\WEB-INF\cfusion\lib\` or `{%cfusion_install%}\lib\`.
- If you plan on developing a Java-based CFX tag to utilize log4j (from the research I've done), you'll need to use version 1.1.3 of log4j, which is not the latest version of log4j, but is the version included with ColdFusion MX. You'll find a link in the resources section of this article that points to the earlier versions of log4j, specifically version 1.1.3. For various reasons, you cannot use the latest versions of log4j and ColdFusion MX due to incompatibilities between version 1.1.3 and version 1.2.8 (the most recent version of log4j).
- Finally, create a folder in `/cfusionmx/wwwroot/` called "log4j", into which you'll put the source code for this article (code examples for this article appear at the end, and can be downloaded from www.sys-con.com/coldfusion/sourcecfm).

What Is log4j and Why Should You Use It?

As I mentioned briefly above, log4j is an open source Java project that gives the developer the ability to control which log statements are output with arbitrary granularity at runtime. Unpacked a little more, log4j enables you to inject logging code into your application during development, leave it there during production, and then configure the level of logging (i.e., only error messages but not warning messages), the section of your application you want logging from, and the endpoint you'd like the logging to reach, all using a simple properties file or an XML document.

You should use log4j for a couple of reasons. First, with the addition of ColdFusion components in ColdFusion MX (which include object-oriented concepts and structures), ColdFusion

developers have the ability to create encapsulated classes that exist within packages. For instance, a company that sells hardware products might have a ColdFusion component named

```
com.mycompany.catalog.product.saw
```

How do you debug or track the logic that exists in the “saw” methods? You could use `<cflog>`, but then you’d either have a separate log file for each component (i.e.; `<cflog file=“saw” type=“information” text=“The saw has been instantiated.”>`) or you’d have one big log file with a lot of unrelated entries, and no way to turn on logging for just the saw component.

Second, `<cflog>`, `<cfoutput>`, or writing your own logging custom tag or component most likely assumes that the log messages should end up in a text file or be written to the browser as part of the returned HTML. log4j makes no such assumptions. Instead, you can configure log4j to output to the system log, to your own custom text file, to a database, to a message queue, to e-mail, or to the Windows Event log. In fact, you can configure log4j to output data to almost anything that receives data, because you can write your own “Appenders,” which are the tools that receive your logging message and then hand it off to the appropriate recipient. Writing an appender is beyond the scope of this article, but there are numerous tutorials available on the Web (some of which are highlighted at the end of this document).

Finally, you should use log4j because it’s extremely fast. log4j was designed from the ground up to be as fast as possible. It’s highly unlikely that something you write during the last week of your development cycle will be as fast or as reliable as log4j.

Hopefully at this point your appetite has been whetted and you want to see how it works! Let’s get to it!

Using log4j and ColdFusion MX

Integrating log4j into your application is relatively straightforward. First you use the `CreateObject()` function to get access to the log4j Category class:

```
categoryObject = CreateObject("java", "org.apache.log4j.Category");
```

The Category object, probably the most used class in the log4j package, defines a static method in Java (which means that you don’t have an instance of the Category class before using it) called `getInstance()` and returns an instance of the Category class specific to the section of code you want to use logging in. When using log4j in Java, you’ll almost always use the fully qualified name of the class as the argument to the `getInstance()` method like this:

```
categoryInstance = Category.getInstance("com.mycompany.MyClass");
```

However, because you’re using log4j in ColdFusion MX, you’ll probably want to either: a) standardize on a common naming system for your code (using names like “com.mycompany.database” or “com.mycompany.products”); or b) if you’re using ColdFusion components use the `GetMetaData()` function to return the name of the component. For instance, given an instance of a ColdFusion component called “theInstance”, you can retrieve the name like this:

```
componentName = GetMetaData(theInstance).name;
```

So back to log4j. You have a variable called “categoryObject” and you want to call the `getInstance()` method on that class to return an instance of the Category class (which will handle the actual logging), specific to the section of code you’re using. You’ll end up with something like this (if you’re not logging inside the CFC):

```
logger = categoryObject.getInstance("com.mycompany.product");
```

or if you’re using a ColdFusion component you might have something like this (if the logging is occurring inside the CFC):

```
logger = categoryObject.getInstance(getMetaData(this).name);
```

That was the hard part! The only thing left to do is log the message. The Category instance (called “logger” in the example above) has five ways of logging the message: `fatal()`, `error()`, `warn()`, `info()`, and `debug()`. Each of these methods is considered to be of a specific priority with `fatal()` being the highest priority, and `debug()` being the lowest priority. You use the one that makes the most sense for the section of code you’re working on. For example, let’s say you’re working on a simple guest book form submission. After saving the information about the guest book submission to a database, you want to log that the submission was successful. This is purely informational and as such your code would look like this:

```
categoryObject = CreateObject("java", "org.apache.log4j.Category");  
logger = categoryObject.getInstance("com.mycompany.guestbook");  
logger.info("guest book submission saved successfully.");
```

To make it more interesting, let’s say that you have a flaky database. Sometimes the database goes down, so you want to log any errors that happen as a result. You’d use the `error()` method instead:

```
<cftry>  
  <cfquery name="save" datasource="mydb">  
    INSERT INTO guestbook(name, email)  
    VALUES ('Aaron', 'myemail')  
  </cfquery>  
<cfcatch>  
  <cfset categoryObject = CreateObject("java",  
    "org.apache.log4j.Category")>  
  <cfset logger = categoryObject.getInstance("com.mycompany.guestbook")>  
  <cfset logger.error(cfcatch.message)>  
</cfcatch>  
</cftry>
```

If you’ve been following along with your favorite IDE, you’re probably wondering where all this data is being sent. Right now everything you’ve done is being ignored because by default, log4j isn’t going to log anything. You have to specify what categories of code you want logged, which priorities you want logged, and where you want that information logged to. So let’s get to the configuration!

There are three ways to configure log4j. The first and easiest is by using the `BasicConfigurator` class. Just like the Category class, you must first use the ColdFusion `CreateObject()` function:

```
configurator = CreateObject("java",  
  "org.apache.log4j.BasicConfigurator");
```

and then you call the “configure()” method:

```
configurator.configure();
```

The two lines of code above set up log4j to log all messages to the standard output stream, which in the case of ColdFusion MX is the log file named “cfusion-out.log”, located in {cfusion}/logs/ or in {cfusion}/runtime/logs/. While simple, this isn’t very helpful and could get to be harmful, so let’s move to the second configuration option.

The PropertyConfigurator class gives you the ability to specify a text configuration file (technically a Java properties file). To configure log4j using the PropertyConfigurator class, you’ll first use the CreateObject function to get access to the PropertyConfigurator class and then you’ll call the “configure()” method on the class with the full path to the properties configuration file:

```
configurator = CreateObject("java",
    org.apache.log4j.PropertyConfigurator");
configurator.configure("c:\mysite\config.properties");
```

Third and finally, you could use the DOMConfigurator, which is a class that allows you to provide an XML configuration file. The syntax is not much different than the PropertyConfigurator:

```
configurator = CreateObject("java",
    "org.apache.log4j.xml.DOMConfigurator");
configurator.configure("C:\mysite\config.xml");
```

The configuration files are the magic in the process. The configuration files allow you to direct logging to different “Appenders”; things like the console, a text file, e-mail, a message queue, or the Windows Event Log. In short, specify the category you want to set up for logging by specifying the name of the category that you used in the code examples above:

```
<category name="com.mycompany.products">
    <priority value="info"/>
    <appender-ref ref="logfile"/>
</category>
```

and then specify the priority and which appender you’d like to use. In the example above, I’ve specified that I want to see messages with a priority of “info” or higher (which includes everything but “debug” messages) and that I want the messages to be sent to an appender called “logfile”. Next you’d configure the appender, which in the above example is called “logfile”:

```
<appender name="logfile" class="org.apache.log4j.FileAppender">
    <param name="File" value="C:\mysite\logging.log" />
    <param name="Append" value="true" />
    <layout class="org.apache.log4j.PatternLayout">
    <param name="ConversionPattern" value="%t %-5p %c{2} - %m%n"/>
    </layout>
</appender>
```

Because the configuration files aren’t really related to ColdFusion, I’ll leave it up to you to read about the available patterns (ways of arranging the data in the log file) and appenders

(methods of storing the data) in the log4j documentation (links available at the end of this article).

Tips and Tricks

log4j is a resource not unlike a database or an e-mail server. You don’t want to use it unnecessarily because it can, and most likely will, slow down an application in production. As such, one of the first things you should do is to make sure your application performs adequately with logging turned off (i.e., in the configuration file, don’t create a <category> element for any of your sections, this effectively turns logging off). Make sure to test your application before and after inserting log4j statements to ensure that log4j isn’t slowing your application down too much.

Second, one of the most expensive operations when using log4j is the configuration operation. If possible, make sure to initialize log4j only once by using an init() method in a ColdFusion component or by using your own custom logic. For instance, you might write something like this in your Application.cfm:

```
<cfscript>
if (NOT IsDefined("application.init") {
    configurator = CreateObject("java",
        "org.apache.log4j.xml.DOMConfigurator");
    configurator.configure("c:\mysite\config.xml");
    application.init = true;
}
</cfscript>
```

The “configure()” method need only be called once because internally it modifies a static variable (a variable whose storage is allocated for the entire execution of a program), which means that log4j will remain configured as long as the ColdFusion server process is running. Note that this also means that the configuration you use applies to all the Web applications running in this instance (if you have multiple instances of ColdFusion MX then you don’t have to worry about this).

Finally, the log4j team recognized that string concatenation can be an expensive operation in and of itself. As such, they included some utility methods in the Category class that let you first check to see if the logging method you want to use is even enabled. For example, the following block of code requires ColdFusion to first evaluate the “guest book was signed by ” & #email#” string before sending data to the info() method.

```
categoryInstance = CreateObject("java", "org.apache.log4j.Category");
logger = categoryInstance.getInstance("com.foo");
logger.info("guest book was signed by " & #email#);
```

However, you can use the isInfoEnabled() method to verify that “info” messages should even be logged. Going back to the example above, it would actually be marginally faster to do this:


```
categoryInstance = CreateObject("java", "org.apache.log4j.Category");
logger = categoryInstance.getInstance("com.foo");
if (logger.isInfoEnabled()) {
    logger.info("guest book was signed by " & #email#);
}
```

Likewise, you could also use the "isDebugEnabled()" method to verify that debug operations should be logged.

Further Resources

I've included two sample ColdFusion scripts at the end of this article, "log4j_sample_propertyconfig.cfm" and "log4j_sample_xmlconfig.cfm," (Listing 1 and Listing 2) as well as the corresponding configuration files for each ("sample_config.properties" and "sample_config.xml"; Listing 3 and Listing 4).

- **Third-Party Logging API:** <http://sys-con.com/story/passwordprompt?storyid=36144>
- **log4j documentation:** <http://jakarta.apache.org/log4j/docs/index.html>
- **log4j earlier releases:** <http://jakarta.apache.org/log4j/docs/earlier.html>
- **log4j configuration:** <http://webforums.macromedia.com/coldfusion/messageview.cfm?catid=273&threadid=726244>

- **ColdFusion debugging:** www.forta.com/blog/index.cfm?mode=e&entry=920
- **Harness the power of log4j with Jabber:** www.106.ibm.com/developerworks/java/library/j-instlog/
- **log4j appenders:** www.qos.ch/ac2001/F11-90.html
- **The complete log4j manual:** www.qos.ch/shop/products/clm_t.jsp 

About the Author

Aaron Johnson is a senior software architect for Mindseye, Inc., and has been developing large-scale Web sites for companies like FAO Schwarz, FootJoy, and Macromedia using ColdFusion, ASP, C#, and Java since 1996. He is a Certified ColdFusion Developer and a Microsoft Certified Systems Engineer. You can find out more about Aaron via his blog (<http://cephas.net/blog/>).

ajohnson@cephas.net

Listing 1

```
<cfscript>
// configure the logger w/ a properties file
configurator = CreateObject("java",
"org.apache.log4j.PropertyConfigurator");
configurator.configure("C:\mysite\sample_config.properties");

// get a logger instance named "com.foo"
logFactory = CreateObject("java", "org.apache.log4j.Category");
logger = logFactory.getInstance("com.foo");
logger.info("informational message using properties config file");
</cfscript>
```

Listing 2

```
<cfscript>
// configure the logger w/ an xml file
configurator = CreateObject("java",
"org.apache.log4j.xml.DOMConfigurator");
configurator.configure("C:\mysite\sample_config.xml");

// get a logger instance
categoryObject = CreateObject("java", "org.apache.log4j.Category");
logger = categoryObject.getInstance("test");

// send the message
logger.info("informational message using xml config file");
</cfscript>
```

Listing 3

```
# Set root category priority to INFO and its only appender to STDOUT.
log4j.rootCategory=INFO, STDOUT

# set com.foo category priority to INFO and its only appender to A1
log4j.category.com.foo=INFO, A1

# STDOUT is set to the console appender
log4j.appender.STDOUT=org.apache.log4j.ConsoleAppender
log4j.appender.STDOUT.layout=org.apache.log4j.PatternLayout
log4j.appender.STDOUT.layout.ConversionPattern=%d %-5p [%t] %-17c{2}
(%13F:%L) %3x - %m%n
```

```
# A1 is set to be a FileAppender.
log4j.appender.A1=org.apache.log4j.FileAppender
log4j.appender.A1.File=C:\mysite\logs\sample.log
log4j.appender.A1.layout=org.apache.log4j.PatternLayout
log4j.appender.A1.layout.ConversionPattern=%-4r [%t] %-5p %c %x - %m%n
```

Listing 4

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE log4j:configuration SYSTEM "log4j.dtd">

<log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/">

  <!-- append to a text file -->
  <appender name="A1" class="org.apache.log4j.FileAppender">
    <param name="File" value="C:\mysite\logs\sample.log" />
    <param name="Append" value="true" />
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%t %-5p %c{2} - %m%n" />
    </layout>
  </appender>

  <!-- append to standard output -->
  <appender name="STDOUT" class="org.apache.log4j.FileAppender">
    <param name="File" value="System.out" />
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%d %-5p [%t] %C{2}
(%F:%L) - %m%n" />
    </layout>
  </appender>

  <!-- only log informational messages in the 'com.foo' category -->
  <category name="com.foo">
    <priority value="info"/>
    <appender-ref ref="A1"/>
  </category>

  <!-- root is the top level of the logging hierarchy: this will send
informational messages to standard output -->
  <root>
    <priority value="info"/>
    <appender-ref ref="STDOUT"/>
  </root>

</log4j:configuration>
```

Download the Code...
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Implementing a Nested Set Model in ColdFusion

Building and using a flexible categorization system

When building applications, from content management to product catalogs, your project will typically be impacted by the method you choose for categorization. Designing code that is flexible enough to allow for ease of reuse, but simple enough to allow for ease of implementation, can often tie a developer in knots. The nested set model can help you fulfill both those goals.

This article will cover a simple implementation of this model, and draws extensively from two sources, Joe Celko's *SQL for Smarties* and Benjamin Elmore's *Dynamic Publishing with ColdFusion MX*. Both are recommended reading for a more in-depth look at the nested set model.

What Is the Nested Set Model?

In order to better understand the advantages of the nested set model in representing category trees within relational databases, we will first look at an alternate, commonly used method, the adjacency list model. The standard adjacency list model can be comprised of simply a categoryID, category, and parent field (see Figure 1).

Using the adjacency list model, a root node – a category that has no parent – is signified by a null value in the parent field (from here on out, node and category will often be used interchangeably). A leaf node is a category that has no children and can be determined through the use of a simple query. Determining the immediate parent or children of a given category also requires only a simple query. However, any function that would require traversing the tree beyond either the immediate parent or children of a given category would require complex recursive queries that are difficult to code, particularly when the depth of the tree is unknown. Similar problems occur when you wish to create functions for removing a sub tree. As adjacency list models are quite common, most experienced developers are well aware of their many deficiencies.

Rather than depend upon explicitly defined parents, the nested set model uses a set of left and right position integers to establish



By Brian Rinaldi

any given category's position within the tree structure. The left and right positions establish a range within which the left and right positions of any children will fall. The range between the left and right positions can easily be expanded to accommodate growth of the tree, and can be contracted just as easily when nodes are removed. In addition, determining the parents or children of a given node within a tree or even determining a given node's depth within the tree is a simple process regardless of the total depth of the tree.

In order to visualize this concept, let's take a root node (i.e., a node that has no parent) named "Macromedia," which is assigned the left and right positions of 1 and 20 respectively. A child of Macromedia called "ColdFusion" could have a left position of 2 and a right position of 9. Furthermore, a child of ColdFusion called "MX" could have a left position of 7 and a right position of 8, in which case it would be automatically recognizable as a leaf node given that the difference between the left and right positions is 1. See Figure 2 for a visual representation of a nested set model.

Building the CFC

Before I begin delving into the code of our component, I would first like to cover some assumptions I used in building it. Although the code is based upon examples from *Dynamic Publishing with ColdFusion MX* and *SQL for Smarties*, it has been modified in part to allow for compatibility with an Access database and also so that all public methods of the component return queries. While there are certainly benefits to using a more object-oriented approach within your components, and this component could be easily modified to meet that goal, I am choosing to return queries as I believe this makes the component easier to understand and implement for beginners and advanced users alike.

Before using this component, you first must create a table named "categories" in your database. If you are using Access, you would structure it as follows (see Figure 3):

1. CategoryID is your primary key and has a data type of text with a field size of 40.
2. Category has a data type of text with a field size of 255.
3. Lpos has a data type of number and a field size of long integer.
4. Rpos has a data type of number and a field size of long integer.

The first method of our component is called new (see Listing 1: categories.cfc). This method is designed to simply create an empty query containing the columns defined within our table. A

	Field Name	Data Type	
categoryID	Text	UUID	
category	Text	name of category	
parentID	Text	UUID of parent	

Figure 1: An example of an adjacency list model created in Access

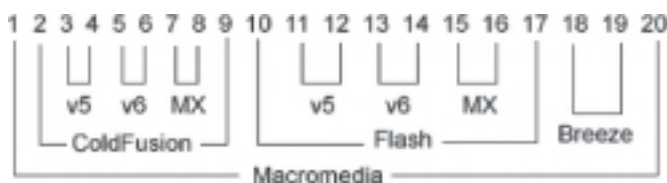


Figure 2: Line number representation of nested set model

	Field Name	Data Type	
CategoryID	Text	UUID	
Category	Text	name of category	
lPos	Number	left position	
rPos	Number	right position	

Figure 3: An example of the nested set model created in Access

row is then inserted and a value set for categoryID, which is a ColdFusion UUID. When building components structured to return queries, I always add this method. The primary function of this method is to make it easier to build a form to update the database. Later we will cover building this form, at which time the purpose of this method will be more obvious.

The save method is fairly straightforward as it simply determines whether to call the Add or the Edit method depending on whether the categoryID sent already exists in the database.

The add, edit, and delete methods are fairly standard representations of their SQL counterparts (insert, update, and delete respectively), except for a few important points that we will cover. The first is that before a category is inserted, either the createRootNode or the createChildNode method must be called depending upon whether a parent category ID has been sent, keeping in mind that a root node is a node without a parent. We will discuss both methods in more detail later, but it is important to note that they both return a structure containing the left and right position integers.

Second, you should be aware that the edit method only allows changing of the text in the category field. This is because, as we discussed before, one of the few drawbacks of the nested set model is that it is extremely difficult to move a sub tree. Therefore, for simplicity's sake, this component simply disallows moving a category once it has been created.

Third, you will note a series of queries within the delete function called CloseGap 1, 2, 3, and 4. To understand the reason for these queries, you must first understand the logic behind including them, which is that, rather than delete a node (category) along with its entire subtree, I have chosen to promote the child nodes of any deleted node. For instance, let's take a category tree containing Grandpa Abe, which has a child, Homer; and Homer has three children, Bart, Lisa, and Maggie. Should something befall Homer, say an accident at the nuclear plant, Bart, Lisa, and Maggie would be adopted by Grandpa Abe. Thus the CloseGap queries are designed to do just that, close any gaps in the left and right position fields within the database, thereby promoting any children of the deleted node.

The get function within our component has been customized to implement a variety of different common queries required when integrating the category system into your site. This method takes four arguments: categoryID, children, parents, and immediate, all of which are optional. Due to the structure of the if statement, the Boolean argument children takes precedence over the Boolean argument parents. In addition, the Boolean argument immediate relates specifically to the children argument but is ignored otherwise. The method is as follows:

- If children is true and a categoryID is supplied, then the component will retrieve the children of a given node
 - If immediate is true, only the immediate children are returned (i.e., one level below the level of a given node), otherwise all children are returned
- If parents is true and a categoryID is supplied, then the component will return all parents of a given node
- If only a categoryID is supplied, then only the information for the specific node is returned
- If no arguments are supplied, then a raw query of all category data is returned

We will discuss later how this method is implemented within your application.

The getAllNodes method is a variation on the get method that returns all categories, with the difference being that getAllNodes returns a lvl column in the query that specifies the depth within the tree of any given node. For instance, given our example from earlier, the Bart category would have a value for lvl equal to 3, as

CFDJ Advertiser Index

ADVERTISER	URL	PHONE	PAGE
21C.JVISENWINZARDS	WWW.JVISENWINZARDS.ORG		31
ACTIVEPDF	WWW.ACTIVEPDF.COM	866.GoToPDF	4
CFDYNAMICS	WWW.CFDYNAMICS.COM	866.233.9626	23
CTIA	WWW.CTIA.SHOW.COM		51
EDGE EAST 2004	WWW.SYS-CON.COM	201-802-3069	42-49
EDGE WEB HOSTING	WWW.EDGEWEBHOSTING.NET	1.866.EDGEWEB	Cover II
EKTRON	WWW.EKTRON.COM/CFDJ		6
FUSETALK	WWW.FUSETALK.COM	866.477.7542	25
HAL HELMS, INC	WWW.HALHELMS.COM		21
HOSTMYSITE.COM	WWW.HOSTMYSITE.COM/CFDJ	877.248.HOST	29
INTERMEDIA.NET	WWW.INTERMEDIA.NET	800.379.7729	Cover IV
MACROMEDIA	WWW.MACROMEDIA.COM/INTO		13
MACROMEDIA	WWW.MACROMEDIA.COM/GQ/2004		17
NETQUEST	WWW.NQCONTENT.COM		3
NEW ATLANTA COMMUNICATIONS	WWW.NEWATLANTA.COM/BLUEDRAGON		9
PAPERTHIN	WWW.PAPERTHIN.COM	800.940.3087	29

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category systems

it is three levels deep in the category tree. In addition, you can specify a `lvl` argument that will filter the returned results by a given depth. Again, using our previous example, specifying the value of 3 in the `lvl` argument would return only the categories of Bart, Lisa, and Maggie. Being able to retrieve the depth information for categories is a useful feature that you will find yourself using repeatedly throughout your application.

The remaining methods, `createRootNode` and `createChildNode` are both private methods, meaning they can only be called from inside the component. They are both designed to return the `pos` structure used within the `add` method as we saw earlier. The `createChildNode` method also updates the tree structure to make room for the node to be created.

Using the Component

Let's cover some basic implementations of the categories component by first looking at how to build a form to update the category tree. We will do this in the context of creating and organizing categories for Web site navigation. The form we will create is missing a lot of niceties, which I will leave for you to add at your leisure. For these examples to work, you must first create the database as explained earlier in this article and add that as a `dsn` within the ColdFusion administrator called `CFDJ`.

Our form is self-submitting and includes only two fields, one a text field to enter the name of the category and the other a select box to choose a parent category if applicable (see Listing 2: `addCategories.cfm`). The select box uses the `lvl` integer returned by the `getAllNodes` method to structure the list so that the depth within the category tree is visible (see Figure 4). The form is pre-filled with either the value of a category determined by `URL.categoryID` or by the values returned by the new method, which is empty except for the `categoryID`. Note that when the form is pre-filled with an existing category, the parent category select box is disabled because, as we discussed earlier, the component disallows changing the parent of an existing category.

When the form is submitted, we first run it through basic server-side error processing. Then we remove any empty val-

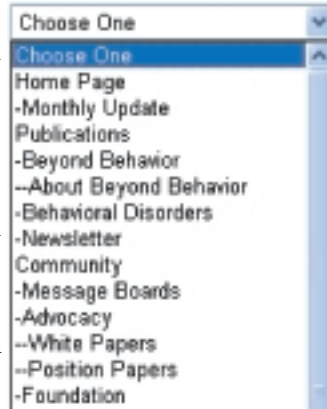


Figure 4: The category select box

Root-level categories

[Home Page](#) | [Publications](#) | [Community](#) | [About CCBED](#)

Immediate Subcategories

[Board of Trustees](#) | [Programs & Recipients](#) | [News](#)

Breadcrumbs


[Community](#) > [Foundation](#)

Figure 5: Example category output (categories taken from [ccbd.net](#))

ues from the form structure so that they are not passed on to our component through the `argumentCollection` (this is simply a shortcut I prefer to use for submitting forms to a component). Finally, we call the `save` method, which, if you recall, determines whether the category should be added or edited.

Once submitted, you can view your category added to the tree within your select box, or view the test page, the basic code which I have also included (see Listing 3: `index.cfm`). The test page shows some standard uses for the different get methods within the component, such as getting the root level categories to propagate a category menu, getting the immediate children of a given category to propagate a submenu, and getting the parents of a given category to propagate breadcrumbs (see Figure 5). As you can see, all of these functions are exceedingly easy to use, as they require very little coding.

Conclusion

Using the nested set model, we have built a component and category structure that is flexible enough to use in a variety of applications with little to no modification. In addition, by abstracting this model into a component, we have made it portable enough to reuse relatively effortlessly. 

About the Author

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brinaldi@criticaldigital.com

Listing 1: `categories.cfc`

```
<cfcomponent output="false">
<cffunction name="new" access="public" output="false"
returntype="query">
<cfscript>
var categoryID = createUUID();
var emptyQuery = QueryNew("categoryID,category,lPos,rPos");

QueryAddRow(emptyQuery);
QuerySetCell(emptyQuery,"categoryID",categoryID);
return emptyQuery;
</cfscript>
</cffunction>
```

```
<cffunction name="save" access="public" output="false"
returntype="query">
<cfargument name="categoryID" type="uuid" required="true">

<cfscript>
var getCategory = "";
var checkID = get(categoryID=ARGUMENTS.categoryID);

if (checkID.recordCount GT 0) {
getCategory = edit(argumentCollection=ARGUMENTS);
}
else {
getCategory = add(argumentCollection=ARGUMENTS);
}
}
```

```

</cfscript>

<cfreturn getCategory>
</cffunction>

<cffunction name="add" access="private" output="false"
returntype="query">
<!-- based upon node.cfc as listed in "Dynamic Publishing with
ColdFusion MX" pp 243-248 --->
<cfargument name="categoryID" type="uuid" required="yes">
<cfargument name="category" type="string" required="yes">
<cfargument name="parentCategoryID" type="uuid" required="no">

<cfscript>
var pos = structNew();
var getCategory = "";

if (isDefined("ARGUMENTS.parentCategoryID")) {
pos=createChildNode(parentCategoryID=ARGUMENTS.parentCategoryID);
}
else {
pos=createRootNode();
}
</cfscript>

<cftransaction>
<cfquery name="insertCategory" datasource="CFDJ">
INSERT INTO categories(categoryID
,category
,lPos
,rPos)
VALUES ('#ARGUMENTS.CategoryID#'
,'#ARGUMENTS.Category#'
,#pos.lPos#
,#pos.rPos#)
</cfquery>
</cftransaction>
<cfscript>
getCategory = get(categoryID=ARGUMENTS.categoryID);
</cfscript>
<cfreturn getCategory>
</cffunction>

<cffunction name="edit" access="private" output="false"
returntype="query">
<!-- based upon node.cfc as listed in "Dynamic Publishing with
ColdFusion MX" pp 243-248 --->
<cfargument name="categoryID" type="uuid" required="yes">
<cfargument name="category" type="string" required="yes">

<cfset var getCategory = "">
<cftransaction>
<cfquery name="updateCategory" datasource="CFDJ">
UPDATE Categories
SET Category=#ARGUMENTS.Category#
WHERE CategoryID = '#ARGUMENTS.CategoryID#'
</cfquery>
</cftransaction>

<cfscript>
getCategory = get(categoryID=ARGUMENTS.categoryID);
</cfscript>

<cfreturn getCategory>
</cffunction>

<cffunction name="delete" access="public" output="false"
returntype="query">
<!-- based upon node.cfc as listed in "Dynamic Publishing with
ColdFusion MX" pp 243-248 --->
<cfargument name="CategoryID" type="uuid" required="true">

<!-- get this category's l and r positions --->
<cfscript>
var getCategory = "";
var parent = get(categoryID=ARGUMENTS.categoryID);
</cfscript>

<!-- delete the original node --->
<cftransaction>
<cfquery name="DeleteCategory" datasource="CFDJ">
DELETE FROM Categories
WHERE CategoryID='#ARGUMENTS.CategoryID#'
</cfquery>

```

```

<!-- if the category has children, connect children to parent of the
original node (see SQL for Smarties pg 458. Single query seperated to
comply with MS Jet DB Engine accepted syntax) --->
<cfquery name="CloseGap1" datasource="CFDJ">
UPDATE Categories
SET lPos = lPos - 1
WHERE lPos BETWEEN #parent.lPos# AND #parent.rPos#
</cfquery>
<cfquery name="CloseGap2" datasource="CFDJ">
UPDATE Categories
SET lPos = lPos - 2
WHERE lPos > #parent.rPos#
</cfquery>
<cfquery name="CloseGap3" datasource="CFDJ">
UPDATE Categories
SET rPos = rPos - 1
WHERE rPos BETWEEN #parent.lPos# AND #parent.rPos#
</cfquery>
<cfquery name="CloseGap4" datasource="CFDJ">
UPDATE Categories
SET rPos = rPos - 2
WHERE rPos > #parent.rPos#
</cfquery>
</cftransaction>

<cfscript>
getCategory = new();
return getCategory;
</cfscript>
</cffunction>

<cffunction name="get" output="false" access="public"
returntype="query">
<!-- based upon node.cfc as listed in "Dynamic Publishing with
ColdFusion MX" pp 243-248 --->
<cfargument name="categoryID" type="uuid" required="false">
<cfargument name="children" hint="if true has precedence over parents
equal true" type="boolean" required="false" default="false">
<cfargument name="parents" type="boolean" required="false"
default="false">
<cfargument name="immediate" hint="For children - immediate only"
type="boolean" required="false" default="true">

<cfscript>
var toReturn = "";
var getChildren = "";
var getParents = "";
var getCategory = "";
var getPos = "";
</cfscript>

<!-- searching for the children of a given node --->
<cfif isdefined("ARGUMENTS.categoryID") AND ARGUMENTS.children>
<!-- only the immediate children of a given node --->
<cfif ARGUMENTS.Immediate>
<cfquery name="getChildren" datasource="CFDJ">
SELECT child.*
FROM categories AS parent, categories AS child
WHERE parent.categoryID = '#ARGUMENTS.categoryID#'
AND child.lPos BETWEEN parent.lPos AND parent.rPos
AND NOT EXISTS (SELECT *
FROM categories AS P
WHERE P.lPos BETWEEN parent.lPos AND parent.rPos
AND child.lPos BETWEEN P.lPos AND P.rPos
AND P.categoryID NOT IN (child.categoryID)
AND P.categoryID <> '#ARGUMENTS.categoryID#')
</cfquery>
<!-- else all children, grandchildren, etc of a given node --->
<cfelse>
<cfquery name="getPos" datasource="CFDJ" maxrows="1">
SELECT lPos, rPos
FROM categories
WHERE categoryID = '#ARGUMENTS.categoryID#'
</cfquery>
<cfquery name="getChildren" datasource="CFDJ">
SELECT *
FROM categories
WHERE lPos BETWEEN #getPos.lPos# AND #getPos.rPos#
ORDER BY lPos
</cfquery>
</cfif>
<cfset toReturn = getChildren>
<!-- searching for the parents of a given node --->
<cfelseif isdefined("ARGUMENTS.categoryID") AND ARGUMENTS.parents>

```



```

<cfquery name="getParents" datasource="CFDJ">
  SELECT      P2.*
  FROM        Categories AS P1, Categories AS P2
  WHERE       P1.lPos BETWEEN P2.lPos AND P2.rPos
  AND         P1.CategoryID = '#ARGUMENTS.CategoryID#'
  ORDER BY    P2.lPos
</cfquery>
<cfset toReturn = getParents>
<!--- searching only for the details of a given node or a list of all
nodes --->
<cfelse>
<cfquery name="getCategory" datasource="CFDJ">
  SELECT      *
  FROM        Categories
<cfif isdefined("ARGUMENTS.CategoryID")>
  WHERE       CategoryID = '#ARGUMENTS.CategoryID#'
</cfif>
  ORDER BY    lpos
</cfquery>
<cfset toReturn = getCategory>
</cfif>
<cfreturn toReturn>
</cffunction>

<cffunction name="getAllNodes" access="public" output="false" return-
type="query">
  <cfargument name="lvl" type="numeric" required="no">

  <cfscript>
    var getNodes = "";
    var getLvlNodes = "";
  </cfscript>

  <!--- based upon nodeFunctions.cfm as listed in "Dynamic Publishing
with ColdFusion MX" pp 253-255 --->
  <cfquery name="getNodes" datasource="CFDJ">
    SELECT      child.category, COUNT(child.lpos) AS lvl, child.lpos,
child.rpos, child.categoryID
  FROM          Categories AS parent, Categories AS child
  WHERE         child.lpos BETWEEN parent.lpos AND parent.rpos
  GROUP BY     child.lpos, child.rpos, child.category, child.categoryID
  ORDER BY     child.lpos
</cfquery>

  <!--- limit the query to only nodes of a given level within the tree
--->
  <cfif isDefined("ARGUMENTS.lvl")>
    <cfquery name="getLvlNodes" dbtype="query">
      SELECT      *
      FROM        getNodes
      WHERE       lvl = #ARGUMENTS.lvl#
    </cfquery>
    <cfreturn getLvlNodes>
  <cfelse>
    <cfreturn getNodes>
  </cfif>
</cffunction>

<cffunction name="createRootNode" access="private" output="false"
returntype="struct">
  <cfscript>
    var Pos = StructNew();
    var GetMaxrPos = "";
  </cfscript>

  <!--- based upon node.cfc as listed in "Dynamic Publishing with
ColdFusion MX" pp 243-248 --->
  <!--- find max rPos --->
  <cfquery name="GetMaxrPos" datasource="CFDJ">
    SELECT      MAX(rPos) AS MaxrPos
  FROM          Categories
  </cfquery>

  <cfscript>
    // if no nodes exist, use 0 for maxrpos
    if (NOT isnumeric(GetMaxrPos.MaxrPos)) {
      GetMaxrPos.MaxrPos = 0;
    }
    // create new node with an lpos one above max rpos and an rpos two
above max rpos
    Pos.lPos = GetMaxrPos.MaxrPos + 1;
    Pos.rPos = GetMaxrPos.MaxrPos + 2;
  </cfscript>

```

```

  <cfreturn Pos>
</cffunction>

<cffunction name="createChildNode" access="private" output="false"
returntype="struct">
  <!--- based upon node.cfc as listed in "Dynamic Publishing with
ColdFusion MX" pp 243-248 --->
  <cfargument name="parentCategoryID" type="uuid" required="true">

  <cfscript>
    var Pos = StructNew();
    // get parent's l and r positions
    var parent = get(CategoryID=ARGUMENTS.parentCategoryID);
    // set lpos and rpos to top end of parent's range
    Pos.lPos = parent.rPos;
    Pos.rPos = parent.rPos + 1;
  </cfscript>

  <!--- increment the parent's r position and every l and r position
above it by 2 --->
  <cftransaction>
    <cfquery name="updateTree" datasource="CFDJ">
      UPDATE    Categories
      SET        rPos = rPos + 2
      WHERE      rPos >= #parent.rPos#
    </cfquery>
    <cfquery name="updateTree" datasource="CFDJ">
      UPDATE    Categories
      SET        lPos = lPos + 2
      WHERE      lPos >= #parent.rPos#
    </cfquery>
  </cftransaction>

  <cfreturn Pos>
</cffunction>
</cfcomponent>

```

Listing 2: addCategories.cfm

```

<cfscript>
  // move defining the request variables to your application.cfm file
  REQUEST.dsn = "CFDJ";
  REQUEST.mapping = "criticaldigital.cfdj_article_code";

  function RemoveEmptyStructureKeys(Structure) {
    var newStructure = StructNew();
    for (i=1; i LTE listLen(structKeyList(ARGUMENTS.Structure)); i=i+1) {
      NAME = listGetAt(structKeyList(ARGUMENTS.Structure), i);
      if (NOT isSimpleValue(ARGUMENTS.Structure[NAME])) {
        "newStructure.#NAME#" = ARGUMENTS.Structure[NAME];
      }
      else if (ARGUMENTS.Structure[NAME] NEQ "") {
        "newStructure.#NAME#" = ARGUMENTS.Structure[NAME];
      }
    }
    return newStructure;
  }

  // create the categories object
  objCategories = CreateObject('component', '#REQUEST.Mapping#.cate-
gories');

  if (isdefined("FORM.fieldNames")) {
    if (FORM.Category EQ "") {
      error="Your category must have a name";
    }
    else {
      // remove any empty values from the FORM structure
      categoryToSave = removeEmptyStructureKeys(FORM);
      // save the category
      saveCategory =
objCategories.save(argumentCollection=categoryToSave);
    }
  }

  // get the category information
  if (isdefined("URL.categoryID")) {
    getCategory = objCategories.get(CategoryID=URL.CategoryID);
    getParent = objCategories.get(Parents=true, CategoryID=URL.CategoryID);
    parentID = getParent.categoryID[evaluate(getParent.RecordCount - 1)];
  }
  // get an empty category query
  else {
    getCategory = objCategories.new();
  }

```


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- CIOs
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- Application Developers
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- Technical Directors
- Analysts
- Consultants
- Programmers
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- Technical Architects
- Team Leaders
- Software Consultants



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Keynotes



Chris Hjelm

CHIEF TECHNOLOGY OFFICER, ORBITZ

Tuesday, February 24, 2004 – 10:00 a.m.

Chris Hjelm is chief technology officer for Orbitz and leads the company's technology strategies, engineering, site architecture, and operations. In this role, he is responsible for all aspects of technology, ensuring that Orbitz continues its industry-leading role in providing the lowest cost and most consumer-friendly technology platform in online travel. Before joining Orbitz, Hjelm served as SVP for technology at eBay Inc., overseeing all aspects of its technology. Under his leadership, eBay achieved record levels of site quality and reliability during a period of accelerating global business growth and new product introductions. Chris is also known for his work in creating and advancing world-class technology platforms at high-growth Internet companies as well as in Fortune 500 environments.



David Mendels

GENERAL MANAGER, MACROMEDIA

Wednesday, February 25, 2004 – 10:00 a.m.

SOA+RIA=ROI

Service-oriented architectures are imperative to drive systems and data integration, but for the integration to matter it needs to reach users in meaningful ways. Rich Internet applications (RIAs) combine the richness of the desktop with the reach of the web. Bringing web services and rich Internet applications together fulfills the promise and value proposition of service-oriented architectures, as users benefit from actionable, intuitive, and effective data and information. This next generation enterprise application architecture will deliver solutions that capitalize on existing systems and increase return on investment.

David Mendels is general manager for designer and developer products for Macromedia. Since joining Macromedia in 1992 he's played a major role in the development of Macromedia's product and business strategies and in his current role supervises the gamut of Macromedia's designer and developer products, including Flex, Flash, Dreamweaver, and ColdFusion. In that capacity, he has overall responsibility for the business unit and directly manages product marketing, product management, and product development. Mendels began his career at Macromedia in the international department, moving to Japan to lead the company's field operations, sales, and marketing there. After returning to the United States in 1995, Mendels held positions running business development, alliances and, general management of a number of Macromedia product groups.



Dr. Robert Sutor

**DIRECTOR OF WEBSHERE INFRASTRUCTURE
SOFTWARE, IBM**

Thursday, February 26, 2004 – 10:00 a.m.

Web Services: Surviving the Mid-Life Crisis

Mid-life can be tough on those who had fast-paced, high-profile youths but suddenly find themselves with dependents and responsibilities put upon them by others. So it is with Web services as it enters the middle phase of its standardization process and moves from being a favorite of the early adopter crowd to being a dependable citizen for the IT mainstream. How is it adapting to the challenge? Have companies like IBM delivered on the early promises of Web services? Do we need to adjust expectations now for Web services so we're not faced with major disappointments later? Dr. Sutor will discuss these and other issues, as well as explain how Web services is a critical part of how companies can become on-demand e-businesses.

Dr. Bob Sutor is IBM's director of WebSphere Infrastructure Software. He is responsible for business and product leadership for the WebSphere Application Server and WebSphere Studio software offerings. Previously, Bob was IBM's director of Web Services Technology, responsible for driving the cross-IBM Web services initiative to continue and advance IBM's leadership in providing Web services solutions, products, and services.



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DAY 1 FEBRUARY 24

	Java	.NET	Web Services
8:00	Registration		
9:00	Empowering Java and RSS for Blogging	NET Compact Framework Performance Tips and Tricks	WS-CAF: Standardized Web Services Transactions and Composite Applications
10:00	Opening Keynote – Chris Hjelm, CTO, Orbitz		
11:00	EXPO OPEN		
1:00	Keynote Panel Discussion - 21st Century Computing: Is IT Fulfilling its Promise - or Breaking It?		
2:00	Enterprise Architecture & Open Source	Using the Enterprise Instrumentation Framework	Web Services Orchestration, Management, and Security - Will They Play Together?
3:00	Squeezing Java	J2EE/.NET Interoperability	Session TBA
4:00	Opening Night Reception		

DAY 2 FEBRUARY 25

	Java	.NET	Web Services
8:00	Registration		
9:00	Desktop Java	Best Practices and Techniques for Building Secure ASP.NET Applications	Building Interoperable Web Services
10:00	Keynote Presentation - David Mendels, General Manager of Products, Macromedia		
11:00	EXPO OPEN		
1:00	Keynote Panel Discussion - The Open Source Debate		
2:30	Next Phase in Evolution of J2EE	Microsoft Office 2003: A Solutions Platform	Service-Oriented Integration: Making the Right Choices To Support The Next-Generation of Integration
4:00	Aspect Oriented Programming & Java	.NET Framework: Exploring What's New in the Base Class Library for "Whidbey"	Impress the Boss: Roll Your Own Web Services Initiative


DAY 3 FEBRUARY 26

	Java	.NET	Web Services
8:00	Registration		
9:00	Simplifying J2EE Applications	Session TBA	Government Real-Time Fraud Detection Using Web Services
10:00	Keynote Presentation - "Web Services: Surviving the Mid-Life Crisis", Dr. Robert Sutor, IBM		
11:00	Apache Axis	Introduction to BizTalk Server 2004 and Web Services	Exploring the Dark Side
12:00	BREAK		
1:00	ANT/JUnit	BizTalk Server 2004 Technical Drilldown	ID, Please. The Case for Giving Web Services an Identity
3:00	Session TBA	Moving your Architecture to .NET	Session TBA


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XML		MX	 Full Day .NET Tutorial Presented by Microsoft The Smart Client Perspective
XML Security Integration Challenges	Enterprise Infrastructure for Rich Internet Applications with Macromedia Flex		
SOA Foundation Components: Building an XML Content Router	Code Base RIA's		
Real Best Practices for XML Web Services Management and Security	Using Flash with Web Services		

XML		MX
XForms - Simplifying the Development of Transactional Web Forms	Using Web Services with ColdFusion	
Session TBA	ColdFusion Components	
Using XML Schemas Effectively in WSDL Design	Rapidly Build Web Services Applications with ColdFusion and Studio	



Full Day Security Tutorial Presented by Westbridge Technology

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What's New in XSLT 2.0?	Leveraging Web Services	
Rich Internet Applications: An XML-Based Approach	Session TBA	
Cutting the Crap: Using Rules to Clean Up XML	Code-based Rich Internet Applications with Macromedia Flex	
Session TBA	Session TBA	



JAVA SESSIONS

Aspect-Oriented Programming & Java RON BODKIN, NEW ASPECTS OF SOFTWARE

Aspect-Oriented Programming (AOP) has become a hot topic of discussion for enterprise development, with the recent news of support by IBM, JBoss, BEA, Eclipse, and IntelliJ.

- What's real?
- What is AOP?
- What problems can it solve today?
- How can you make an informed decision about using AOP?
- What is the best adoption strategy?
- What are the long-term possibilities for AOP?

This session answers these questions and gives an introduction to AOP for enterprise development. AspectJ is a seamless AOP extension to Java. It allows the consistent and flexible implementation of crosscutting concerns such as security, exception handling, testing, logging, caching, and business rules. This is a major improvement on scattered and tangled traditional implementations.

This tutorial introduces AOP and shows how to use AspectJ effectively in an enterprise context, including examples of tools support. Attendees should have experience with OO design and Java development. AspectJ is an open source project available from the Eclipse consortium.



BIO: Ron Bodkin is the founder of New Aspects of Software, which consults and trains on enterprise Java applications with an emphasis on Aspect-Oriented Programming. Ron is also a member of AspectMentor, a consortium of AOP experts. Ron previously worked for the AspectJ group at Xerox PARC, where he led the first AOP implementation projects and training for customers. Prior to that, Ron was founder and CTO at C-bridge, a consultancy that delivered enterprise applications using Java and XML frameworks.

Squeezing Java

ALAN WILLIAMSON, JAVA DEVELOPER'S JOURNAL

Java is a very powerful language, and while it offers the developer a rich array of tools, the fundamentals mustn't be overlooked. Improving your code at the core layer will result in great improvements in efficiency and produce (hopefully) fewer bugs. We'll look at the dos and don'ts of programming and learn lots of hints and tips that will accelerate your Java coding.



BIO: Alan Williamson is SYS-CON Media's technical director, and editor-at-large of *Java Developer's Journal*. In addition, he holds the CTO office at n-ary (consulting) Ltd, one of the first companies in the UK to specialize in Java at the server side.

Enterprise Architecture & Open Source JAMES MCGOVERN, THE HARTFORD FINANCIAL SERVICES GROUP, INC.

Use of open source software within the enterprise is gaining momentum. The vast majority of organizations use some form of open source software, such as Linux, Apache, and JBoss, in production environments. The enterprise architecture, however, needs to incorporate the best thinking of the industry that not only includes using open source but contributing to it. The model in which open source software gets developed has practices that could assist an organization in becoming agile in their software development practices and

allow them to develop software faster, with lower costs and better quality. In this session you will learn:

- Two models of development: the cathedral and the bazaar
- Value proposition of using open source
- Harnessing the power of the mob: the value proposition of contributing to open source
- Making the build versus buy decision: additional thoughts

BIO: James McGovern is an industry thought leader and the author of the best-selling book, *A Practical Guide to Enterprise Architecture* (Prentice Hall). He is working on two upcoming books entitled *Agile Enterprise Architecture* and *Enterprise SOA*. He is employed as an enterprise architect for The Hartford Financial Services Group, Inc. He holds industry certifications from Microsoft, Cisco, and Sun. He is member of the Java Community Process and of the Worldwide Institute of Software Architects.



J2EE v1.4

BILL ROTH, E.PIPHANY

Day-to-day work with deadlines makes it difficult to keep abreast of the rapidly evolving landscape of J2EE, especially given the numerous constituent J2EE technologies. J2EE v1.4 is chockfull of new services that affect and benefit a wide range of enterprise development tasks. This talk will extract core material from the speaker's new *J2EE Developer's Handbook* and describe what's embodied by J2EE v1.4. The new Web services features provided by J2EE v1.4 in particular will be highlighted. The talk will also briefly address those services missing from the current J2EE standards but still needed when building enterprise applications.



BIO: Bill Roth is senior technical evangelist for E.piphany. With over 15 years in this industry, he has played numerous roles in engineering and product marketing including program manager for Java IDL, and managing product marketing and product management for J2EE 1.2 at Sun.

Apache Axis

CHRIS HADDAD, BURTON GROUP

Apache Axis is the very popular SOAP engine, which includes everything you need to start producing Web services. Discover just what Axis is and how you can utilize the power of this free engine to kick-start your Web services.



BIO: Chris Haddad has 13 years experience in Web services, protocols and standards (SOAP, UDDI, WSDL), application framework, development tools, key development languages (Java, C++, Perl, JavaScript), and enterprise application integration. His background includes Grand Central, Flamenco Networks, Adjoin, Securant, Employease, Jamcracker, TRX, and Raygun.

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Empowering Java and RSS for Blogging

JASON BELL

One of the fastest growing areas over the last few years is that of the blogging community. The ease at which you can post and publish information has enabled everyone to become his or her own publisher. One power of blogs has been the syndication of data via the RSS (XML) protocol. Discover how you can easily produce and consume RSS feeds within your Java applications for wider appeal and hook into the likes of JavaBlogs.



BIO: Jason Bell is a Java developer and IT development manager for a B2B portal in the UK. He also contributed to a number of open source projects and is an advocate of everyone reading the API docs.

Ant/JUnit

KYLE GABHART

A defined and easily repeatable process is one of the most necessary but often least-used aspects of good software development. A defined build process ensures that your project's software is built, deployed, and tested identically each time. Without this type of control and predictability, valuable time is often lost chasing down bugs that don't exist or rejecting solutions that were only partially implemented.

A critical measure of the success of software can be found in whether or not it executes successfully. Equally important, however, is whether or not that software does what it was intended to do. JUnit is an open source-testing framework that provides a simple means for developers to define their intentions for how their software should work. JUnit then provides test runners that process your intentions and verify that your code performs as intended. The result is software that not only works, but works in the correct way.

Apache's Ant is a powerful scripting tool that enables developers to define and execute routine software development tasks using the simplicity and extensibility of XML. Ant provides a comprehensive mechanism for managing software development projects, including compilation, deployment, testing, and execution. In addition, it is compatible with any IDE or operating system.



BIO: Kyle Gabhart is an independent consultant, mentor, and published author, specializing in J2EE, XML, and Web services technologies. He is a prolific writer, with his most recent work displayed on IBM's developerWorks Web site in the J2EE Pathfinder column. You can find him on the Web at www.Gabhart.com.

Desktop Java

JOE WINCHESTER, IBM

Java is enjoying a renaissance on the desktop, and there are several reasons for this:

- The issues that plagued early client/server projects or Java desktop applications have largely been solved. Swing 1.4.2 delivered great performance improvements, good fidelity XP, and GTK look-and-feel classes. Java Web Start now exists as a way to deploy to a client PC the programs that run in a local JRE and enjoy the benefits of local caching, lazy update, and execution within Java's security model
- Java is becoming part of the default installation setup for many PC vendors such as Dell, HP, and Gateway.
- SWT provides a set of rich native controls over and above those offered by AWT, and many Java developers are finding that it's a useful GUI toolkit to use in their end-user applications.

FULL DAY JAVA TRAINING

CREATE SERVER-BASED

SOLUTIONS USING

JAVA 2 ENTERPRISE EDITION

Developing J2EE Applications Using WebSphere Studio Application Developer*

February 25th & February 26th

J2EE is a standard coherent Java API for creating server-based applications, and WebSphere is an industry-leading enterprise application server. Students learn the steps necessary to develop J2EE applications (built using database, servlets, JavaServer Pages, and Enterprise JavaBeans) using WebSphere Studio Application Developer. Hands-on labs reinforce the lecture topics while providing practical experience.



BIO: Ken Greenlee is the chief technology officer of Kenetiks, Inc., a Java-WebSphere training and consulting company he founded in 1997. He has written many courses covering J2SE, J2EE, WebSphere Studio Application Developer, WebSphere Application Server, and WebSphere Portal Server. Prior to founding Kenetiks, he worked for IBM in North Carolina where he worked on development teams responsible for such products as VisualAge Smalltalk and OS/2. He holds a BS degree in computer science from Indiana University along with numerous professional certifications in Java and WebSphere.

* Available for Gold Pass + Training Pass registrants only.

- HTML is no longer being viewed as the only viable client for application development. A number of hybrid technologies that combine the benefits of server-side computing with a client GUI have arisen, including Ultra Lightweight Client, Droplets, JFlash, Macromedia Royale, Asperon, and Thinlets.

This session will look at the Java desktop space and discuss the issues and technologies, as well as what is at stake if Java can or can't recapture its lost pride as a client platform.



BIO: Joe Winchester is a software developer working on WebSphere development tools for IBM in Hursley, UK. Joe was part of the expert group for JSR 57.

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.NET SESSIONS

.NET Compact Framework Performance Tips and Tricks

JIM WILSON, JW HEDGEHOG, INC.

Learn the techniques that can be used to increase the responsiveness of user interface and network operations for users of applications built on the .NET Compact Framework. Look under the covers at advances and changes in the "Whidbey" release that significantly improve performance. Get a general overview of how the .NET Compact Framework works under the hood at runtime, with specific focus on performance implications. Next, we cover general user interface tips to increase performance. Explore how asynchronous infrastructure, such as threading, in the .NET Compact Framework can be leveraged to optimize both user interface and network operations. Learn about the architectural guidelines for creating applications that perform well under frequently changing network conditions.



BIO: Jim Wilson is president and cofounder of JW Hedgehog, Inc., a consulting firm specializing in the integration of smart devices as part of enterprise solutions with a focus on the .NET Compact Framework, .NET Framework, Web services, and other XML-related technologies. He develops and teaches DevelopMentor's Mobility training course, was one of Microsoft's original five MVPs for the .NET Compact Framework, has written articles for numerous publications, and has spoken at a myriad of events, including Microsoft's Tech-Ed and Mobility Developers conferences.

Best Practices and Techniques for Building Secure ASP.NET Applications

PATRICK HYND, CRITICALSITES

When the enterprise depends on your application, careful attention to security is essential. This session provides specific recommendations to follow when developing secure ASP.NET Web applications and services, and focuses on the details of configuring IIS for security. Understand how to use authentication, authorization, threat modeling, configuration settings, and secure database access to create secure systems, plus learn common coding techniques for storing secrets, error handling, data validation, and code access security.



BIO: Patrick Hynds, MCSD, MCSE+I, MCDBA, MCSA, MCP+Site Builder, MCT, is the Microsoft Regional Director for Boston and the CTO for CriticalSites. Named by Microsoft as the Regional Director for Boston, he has been recognized as a leader in the technology field. An expert on Microsoft technology (with at last count 54 Microsoft certifications) and experienced with other technologies as well (WebSphere, Sybase, Perl, Java, Unix, Netware, C++, etc.), Patrick previously taught freelance software development and network architecture. He has been a successful contractor who enjoyed mastering difficult troubleshooting assignments. A graduate of West Point and a Gulf War veteran, Patrick brings an uncommon level of dedication to his leadership role at CriticalSites. He has experience in addressing business challenges with blended IT solutions involving leading-edge database, Web, and hardware systems. In spite of the demands of his management role at CriticalSites, Patrick stays technical and in the trenches, acting as project manager and/or developer/engineer on selected projects throughout the year.

Using the Enterprise Instrumentation Framework

DEREK FERGUSON, EXPAND BEYOND CORPORATION

The Microsoft .NET Framework 1.1 and Windows Server 2003 offer a number of new features to help developers instrument their code. In this session, you'll learn

about the challenges facing application management in today's distributed world. We will examine the new unified instrumentation API in the Enterprise Instrumentation Framework (EIF), including the new Windows Event Trace available in Windows Server 2003, configurable at-source event filtering, and how request-based event tracing using EIF allows you to put a request context around the trace messages that map to a business process flow in your application. We will also discuss the benefits to both the developer and the application administrator for using EIF in your application.



BIO: Derek Ferguson is chief technology evangelist for Expand Beyond Corporation (www.xb.com), the worldwide leader in mobile software for enterprise management. He is also editor-in-chief of *.NET Developer's Journal* and author of the book *Mobile .NET* (Apress).

.NET Framework: Exploring What's New in the Base Class Library for "Whidbey"

JULIA LERMAN

The base classes serve as the essential libraries for any developer. Continued evolution of the base classes provides numerous benefits, including the ability to write more reliable, faster solutions, easier-to-write code, and more solutions entirely in managed code. Take a look at the many features that are a part of that evolution, including features in IO, event-logging, and various features in System.



BIO: Julia Lerman is the owner of Julia Lerman, Inc (dba The Data Farm), and has been developing software applications and consulting to businesses since 1984. Julia is the founder and leader of VTdotNet, Vermont's .NET user group (www.vtdotnet.org), as well as a member of the User Group Relations Committee for INETA (International .NET Association) www.ineta.org. She writes on Visual Studios and .NET and in her pre-Visual Basic days, FoxPro Advisor. Having spent many years as a FoxPro. Julia is working very hard to help bring the same community spirit to .NET that is so unique to FoxPro.

Microsoft Office 2003: A Solutions Platform

JOHN HOLLINGER, INTERNOSIS

For all developers who would like to integrate custom business solutions with Microsoft Office products, this session will introduce you to the expanded developer features that have been included in the newest version of Microsoft Office. Come explore new XML-based programmability in everything from Word 2003 and Excel 2003 to FrontPage 2003 and SharePoint. Build powerful, modular solutions with Web services. Learn about InfoPath 2003 support for XML standards. Discover how to use the Microsoft Visual Studio Tools for the Microsoft Office System to automate and extend Microsoft Office Word 2003 and Microsoft Office Excel 2003 using Visual Basic .NET and Visual C# .NET. More than ever, Office has a solution for you.



BIO: John V. Hollinger serves as CTO of Internosis clients are able to leverage the latest technologies while planning for tomorrow's challenges. Mr. Hollinger is responsible for the performance of the Northeast/Commercial business unit, including all aspects of business development, client care, marketing, resource management, and financial management. Prior to joining Internosis, he played an instrumental role in the creation of New Technology Partners (NTP) and then went on to run a highly successful division of Xpedior, where his team was a four-time Microsoft Solution Provider Partner of the Year in New England and the recipient of the award on a worldwide basis in 1997. Previously, John was vice president of Advanced Technologies at AIG.

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Advanced BizTalk Server 2004

BRUCE BACKA, CRITICALSITES

BizTalk Server 2004 is designed to provide Enterprise Application Integration (EAI), Business Process Automation (BPA), and Information Worker Integration solutions. Come join us for a technical drilldown on the new features and toolsets available.



BIO: Bruce Backa is the founder of CriticalSites. A noted business leader and consultant in the IT industry, he has acted as chief architect, technologist, and project manager for assignments involving large-scale technology and implementation strategies. He has held the positions of director of Technology and Business Research for the American Stock Exchange (AMEX) and director of Technology for American International Group. Bruce has been responsible for the architecture, implementation, and management of a worldwide client/server networking infrastructure for a Fortune 10 company with a platform of over 600 servers connecting 10,000 users across 50 cities throughout North America and offshore. In 1994 he founded NTP Software, a provider of business solutions for Windows NT and Windows 2000. At the recent World Economic Forum in Switzerland, Bruce was recognized as a technology pioneer. This follows a similar award from the National Computer Conference in 1974, where he was honored as a part of the Dartmouth College team that invented computer timesharing.

Moving your Architecture to .NET

CARL FRANKLIN, FRANKLINS.NET

This session is focus on how to migrate existing business components from VB6 COM Objects to VB.NET assembly components. We'll spend time discovering how to best move different tiers of a multi-tiered application from COM to .NET, as well as effective strategies on how to wrap existing COM components for interoperability. We'll also examine best practices for moving your application from a COM-based architecture to a .NET-based architecture.



BIO: Carl Franklin has been a luminary in the VB community since the very early days. Since then he has written extensively on the subject of VB. He has authored two books for John Wiley & Sons on sockets programming in VB, and in 1994 he helped create the very first Web site for VB developers, Carl & Gary's VB Home Page. He now teaches hands-on VB.NET classes for his company, Franklins.NET. He has taught developers from Citigroup, Aetna, Fidelity Investments, Fleet Bank, Foxwoods Casino, UTC, Hubbell, Microsoft, Mohegan Sun Casino, and Northeast Utilities, to name a few. Carl is cohost of a weekly talk show on his Web site for .NET programmers, called ".NET Rocks!" Carl is MSDN Regional Director for Connecticut.

Introduction to BizTalk Server 2004

BRIAN LOESGEN, NEUDESIC

BizTalk Server 2004, the latest and third version of BizTalk, is an exciting tool that all .NET application developers should know about. BizTalk fills two key business needs: enterprise application integration and business process automation. The powerful messaging platform allows for easy integration between applications, and also between enterprises. The business process automation engine, based on the new BPEL XML specification, allows for automation of even the most complex business processes. Throw in InfoPath for a user interface into BizTalk, tight integration with Visual Studio, Sharepoint, and Office-based monitoring and reporting tools, and you get an incredibly powerful tool.

This session will be an overview of BizTalk Server 2004. Concepts and tools will be demonstrated by walking through several real-world, practical examples of BizTalk usage. Particular attention will be paid to Web service integration and orchestration,

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.NET—The Smart Client Perspective Tuesday, February 24, 2004

For the business world, one of the most exciting promises of the information age is the opportunity to provide employees with access to information and the tools to act on that information whenever and wherever they need to. To a certain extent, that promise has already been achieved. Today, most businesspeople work on PCs that provide access to information, applications, and resources far beyond the boundaries of their local machine.

There are limits, however. Today's Internet model for information and application distribution assumes access to a network connection, but ubiquitous Web connectivity still lies in the future. And some computing tasks require robust functionality that can only be provided efficiently by "rich" client applications that reside on the local computer.

A challenge arises when your organization requires both the flexibility and immediacy that comes with online access to data and applications, plus the full functionality of traditional client software.

The answer: smart client software.

This day-long tutorial focuses on developing and deploying smart client applications.

Free .NET Tutorial when you register for a VIP Pass.
Seating is limited. Full conference attendees will receive priority seating for all tutorials, all other seating is on a first-come, first-served basis.

showing why BizTalk Server 2004 deserves consideration as the integration "glue" in a services-oriented architecture.

BIO: Based in San Diego, Brian Loesgen is a principal consultant with Neudesic, a premier southern California solution provider and system integrator. At Neudesic, Brian uses his expertise to architect and deliver advanced Microsoft technology solutions, and to translate new, leading-edge technologies into real-world value. He is a coauthor of the *Professional XML*, *Professional ASP/XML*, *Professional Windows DNA*, *Professional ASP.NET Web Services*, and *Professional VB.NET Web Services* books from Wrox, and is currently working on the *BizTalk Server 2004 Developers Guide*, due in 2004. In addition, Brian has written technical white papers for Intel, Microsoft, and others. Brian has spoken at numerous major technical conferences worldwide and is a cofounder and president of the International .NET Association (ineta.org). He coleads the San Diego .NET user group, and leads the San Diego Software Industry Council Web Services SIG.

In his spare moments, Brian enjoys outdoor activities such as cycling, hiking in the mountains, kayaking, camping in the desert, or going to the beach with his wife Miriam and children Steven and Melissa.

Brian can be reached at brian.loesgen@ineta.org.

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WEB SERVICES SESSIONS

WS-CAF: Standardized Web Services Transactions and Composite Applications

ERIC NEWCOMER, IONA TECHNOLOGIES

The Web Services Composite Application Framework is a collection of three specifications – Web Service Context (WS-CTX), Web Service Coordination Framework (WS-CF), and Web Service Transaction Management (WS-TXM) – designed to solve problems that arise when multiple Web services are used in combination (“composite applications”) to support information sharing and transaction processing. As coauthor of the specification, Eric will discuss how WS-CAF addresses the underlying issues of Web service context propagation and transaction management to expand the scope, usability, and reliability of Web services for business process automation.



BIO: In the role of chief technology officer at IONA, Eric is responsible for IONA's technology roadmap and the direction of IONA's e-Business Platforms as relates to standards adoption, architecture, and product design.

Government Real-Time Fraud Detection Using Web Services

NEIL MCGOVERN, SYBASE, INC.

Government agencies are faced with increasing amounts of data and are challenged to make sense of, and act on, that data in real time. Failure to interpret and execute on data can result in security threats and, potentially, loss of life. Government agencies are increasingly investing in Web services solutions to address their need for real-time access to information.

The Canadian Passport Office is an example of a government agency leveraging Web services to exchange information in real time to combat terrorism and other illicit uses of fraudulently obtained passports. The agency selected IT consulting firm Pentelar and Sybase, Inc., technologies to electronically authenticate identity document data through the use of Web services and ebXML. Identification tasks performed across 10 provinces and 3 territories previously handled by physical document inspection are now conducted in real time with absolute security and reliability.

In this session, Sybase and Pentelar will discuss this successful pilot project and highlight the ebXML capabilities that enable the Canadian Passport Office to address real-time information exchange.

BIO: Neil McGovern has over 15 years of experience in the software industry. Currently, he is responsible for platform strategy for Sybase's infrastructure product line, including its enterprise-class RDBMS; Sybase ASE; and integration, portal, and tools product lines. Prior to that, Neil was responsible for building the Sybase (New Era of Networks) Adapter suites, commonly recognized as one of the most advanced and complete sets of adapters in the EAI marketplace. Neil developed ERP package expertise as CTO of Convoy Corporation, which specialized in PeopleSoft integration. He led the Development and Professional Services teams for Convoy Corporation, which was purchased by Sybase (New Era of Networks) in 1999 after recording triple-digit growth for three consecutive years.

Service-Oriented Integration: Making the Right Choices To Support The Next-Generation of Integration

DAVID CHAPPELL, SONIC SOFTWARE

Applications are increasingly being developed “built-to-integrate,” providing the ability to easily expose key functionality through commonly defined interfaces. Gartner calls this concept SODA, or service-oriented development of applications, fitting into its overall service-oriented architecture landscape. When applied to the ever-present integration challenge, SODA represents a transition to service-oriented integration.

But making the right architectural decisions is absolutely vital to ensuring success with service-oriented integration projects – whether applications were built to integrate or not. Choices at all levels – from application-interface style to overall system architecture – can seriously affect the long-term value derived from integration projects. Application infrastructure products on the market today embody architectural directions that should be carefully examined before making purchase decisions. Any two products that claim to support a “service-oriented architecture” may, in fact, promote radically different architectures.

This presentation will examine the leading choices for supporting service-oriented integration: enterprise service buses (ESBs), integration brokers, and application suite platforms.



BIO: Dave Chappell, VP and chief technology evangelist for Sonic Software, has over 18 years of experience in the software industry. Dave and Sonic Software are involved in many standards organizations, technical committees, and expert groups, including the W3C, OASIS, WS-I, and the Java Community Process. Dave is an active contributor to the Apache Axis project and SOAPBuilders.

Dave also has extensive experience in distributed computing, including message-oriented middleware, CORBA, COM, and Web application server infrastructure. In 2002, Dave received the “Most Outstanding Individual Contributor to the Java Community” award from the editors of JavaPro Magazine.

Securing the Web: What Can Be Done Today

MARK SECRIST, HEWLETT-PACKARD CO.

Security is considered one of the main barriers to the adoption of Web services today. With the proliferation of emerging security standards, there is a lot of confusion over which ones are mature enough to use and how they might fit together. This session will present cover current and emerging security standards for Web services and show how they can be fit together architecturally to address various security concerns. At the conclusion, the audience will have a better understanding of these standards and how to begin securing their own Web services.

BIO: Mark Secrist is a senior software consultant for HP's Developer Resources Organization, with over 15 years of experience working in the software development industry. He provides technical consulting to HP and its customers in the areas of J2EE and Web services development, as well as development strategies for “management-ready” applications. In this capacity, he has written a number of white papers and trade publication articles, presented at a number of industry events, and provided training and consulting to many of our enterprise customers.

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Exploring the Dark Side

PETER VARHOL, COMPUWARE CORPORATION

The growing use of services-oriented architectures puts pressure on application developers relying on Web services for key features of their applications. Performance, scalability, and reliability of these components affect the ability of applications to meet service-level agreements, yet can't easily be analyzed as a part of the application when developers have a problem. In fact, the Web service may be on a different software platform than the rest of the application. This session describes how developers can shed light on memory use in Web services written in either .NET or Java, even if they didn't write the code and wrote their own applications on the other platform.

BIO: Peter Varhol is a product manager at Compuware Corporation, where he provides direction for developer tools targeting enterprise applications and Web services. He holds graduate degrees in computer science and mathematics.

Building Interoperable Web Services Using WS-I Basic Profile

KEVIN LIU, SAP LABS, LLC

The promise of Web services interoperability is based on a set of standards, including XSD, SOAP, WSDL, and UDDI. However, early interoperability experiments such as the SOAPBuilder activity has proven that making these technologies seamlessly work together, inter- or intra-enterprise, is a bigger challenge than most of us expected. Most of the Web services technologies are still in the standardization process, and Web services platforms have to be based on pre-standard draft specifications. The inconsistencies and ambiguities left in these initial drafts can easily lead to different interpretations for the same features and substantially compromise the promised interoperability. This presentation explains how WS-I Basic Profile addresses these challenges, and what are the key advises you can get from the profile that can make your Web services interoperable. It explains why the profile disallows SOAP encoding and why RPC style should give way to document style.

BIO: Kevin Liu is an architect of XML Web services technologies at SAP Labs, California. Kevin helps to drive the adoption of Web services technologies in SAP's strategic products, as well as representing SAP in various standards bodies. He has over 10 years of experience in software engineering and in financial industries and holds multiple master's degrees in information management, finance, and economics.

ID, Please. The Case for Giving Web Services an Identity

ASHISH LARIVEE, NOVELL

Without identity management, Web services can be consumed by anyone. The challenge for Web services developers is to provide appropriate access based on the user's identity. As identity management moves into the forefront of technology, directory services will evolve from simple LDAP repositories used for authentication and storage to robust engines that provide identity integration, access management, and policy enforcement. This presentation will discuss how identity management and directory services provide a robust solution for Web services authentication, authorization, and single sign-on.

BIO: With more than nine years of experience in the software industry, Ashish Larivee has designed and developed many enterprise applications

across a variety of platforms, including Microsoft, Lotus Notes/Domino, and J2EE. In 1999, Ashish joined SilverStream Software, acquired by Novell in July 2002, and has served in various roles in consulting, development, and technical marketing. In her current role, she helps define the strategy and product direction across Novell's Web Application Development Products.

Web Services Orchestration, Management, and Security - Will They Play Together?

PAUL LIPTON, COMPUTER ASSOCIATES

Web Services orchestration, management, and security are among the principal challenges facing implementers of service-oriented architectures today. There is still much confusion in the IT community about the standards themselves, which are at various stages of maturity. Also, their relevance to enterprise IT and how they might someday be able to effectively work together is often unclear. This session provides a useful overview of standards in these three critical areas of Web services - orchestration/choreography, management, and security - and more importantly, how each affects the other. Attendees will gain practical knowledge and a deeper understanding of future trends and the need to address certain real-world issues in order to create a more cost-effective and agile IT infrastructure.



BIO: Paul Lipton is the Web services technology leader for the field services organization and a technology strategist in the Office of the CTO at Computer Associates. He has been an architect and developer of enterprise systems for more than 20 years, and has worked closely with key CA customers to architect distributed solutions using J2EE, .NET, wireless, and Web services technology. Paul has represented CA in various standards organizations, and has participated in the Java Community Process. He has published magazine articles on many technologies including Web services, Java, .NET, EAI, wireless technology, and distributed systems.

Impress the Boss: Roll Your Own Web Services Initiative

BOB ZUREK, ASCENTIAL SOFTWARE

Some companies are leveraging open source software like Linux, JBoss, PHP, MySQL, and Apache SOAP to develop and deploy Web services. As this open source Web services stack continues to mature, companies will benefit beyond simply saving money on license fees; they will be able to assemble the stack and get a Web service up and running quickly as well.

Developers frustrated by their enterprise's lack of Web services interest can immediately master and build Web services at home with open source stack components with little investment except time and a broadband connection. Imagine impressing your company with a demo of wrapping that chunk of code as an open source Web service and calling it from a legacy Visual Basic application.



BIO: Bob Zurek, VP of Advanced Technology, Ascential Software, is responsible for Ascential's overall product strategy. He is instrumental in developing and driving its enterprise integration strategy, including its parallel processing framework, data quality, and Web services strategies. Previously, he was a senior analyst with Forrester Research; prior to Forrester, he held senior management positions at LumaPath, Centive Systems, and Sybase.

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XML SESSIONS

Real Best Practices for XML Web Services Management and Security

KERRY CHAMPION, WESTBRIDGE TECHNOLOGY

Companies deploying Web services in a meaningful way are increasingly finding they need to address Web services management and security early in the architectural phase. Basic Web services connections are easy to do, but managing the security, performance, scalability, and the inevitable changes to the production environment requires some knowledge, expertise, and planning. This session cuts through the hype and outlines real-world mistakes many companies make when deploying Web services and the real best practices from companies who have successfully captured the value of XML Web services. It provides practical advice on how to successfully manage and secure your XML Web service environment.

BIO: Kerry Champion is president and founder of Westbridge Technology, a leading provider of XML Web services management and security solutions. A frequent writer and speaker on XML Web services, Kerry is a renowned technologist who has served in various senior technical and product strategy roles at enterprise security and messaging companies.

SOA Foundation Components: Building an XML Content Router

DAN STIEGLITZ, TIAA-CREF

One of the fundamental components for any burgeoning SOA will be an XML content router. This session explores the concepts, patterns, and open source software available that facilitate building an XML content routing system. The system can be exposed as a Web service or simply as a stand-alone J2EE component for use in your enterprise. The "restaurant" pattern is introduced as the principal design pattern for building the service, and this pattern's applicability to building generic services is discussed. Applying the router as an XML data integration tool is also discussed, as well as its potential for acting as a service orchestrator.

BIO: Visit www.sys-con.com/edge for complete speaker information.

What's New in XSLT 2.0?

STEVE HECKLER, ACCELEBRATE

XSLT 2.0, which may achieve W3C Recommendation status by conference time, offers unparalleled power in conjunction with XPath 2.0 for transforming XML documents. In this engaging, example-rich seminar, Steve Heckler demonstrates the most important new features of XSLT 2.0, including sequences, new data types and XML Schema support, regular expressions, multiple document output, grouping, new control-flow operators, and much more. Current/future support for XSLT 2.0 on the Java and .NET platforms will also be discussed. Most examples will use Saxon, but .NET examples will be included if .NET supports XSLT 2.0 by conference time.

BIO: Steve Heckler has been a leading IT trainer and application developer for nearly a decade. Prior to founding Accelebrate in March 2002, he served nearly seven years as vice president and then president of WestLake Internet Training. He holds bachelor's and master's degrees from Stanford University.

Using XML Schemas Effectively in WSDL Design

CHRISTOPHER PELTZ, HP

Developers building Web services today are beginning to see the value of using the document-style approach over RPC. Recent experience shows that to take full advantage of document style Web services requires a strong knowledge of XML Schemas and related XML standards. This session presents a number of important tips and techniques for properly using XML Schemas in the design of a Web services interface, including important XML-based development tools, binding considerations between XML and underlying objects, WSDL reusability through XML Schemas, and XML Schema naming best practices.

BIO: Chris Peltz is a senior software consultant within HP's Developer Resources Organization. He provides technical and architectural consulting to enterprise customers in the areas of J2EE, Web services, and mobile development. Chris has over 10 years of software experience in object-oriented technologies, 4GL development, GIS, and Web applications design.

Using Rules to Clean Up XML

GARY BRUNELL, PARASOFT

Garbage in, garbage out – it's an axiom that applies to many aspects of enterprise development, but none more so than building reliable and robust Web applications and integration projects with XML. Since its inception, XML has been seen as the cure-all for problems related to Web applications and integration projects. However, poorly written XML can slow down an integration project, or worse, cause the integration project to collapse. The key to successfully using XML in an integration project is to first understand the inefficiencies that may cause poorly written XML, and then apply a rule-based system that establishes policies to follow.

BIO: Gary Brunell joined Parasoft in the fall of 2001 to develop and head the company's professional services division. He is responsible for spearheading delivery services, technical support, and training initiatives as well as establishing process-improvement infrastructure.

XML: Getting Started with Minimum Investment

KETAN PATEL, DATAWATCH

Many organizations are evaluating XML as an enabler for sharing and presenting information. Whether part of a portal strategy, an alternative to EDI for billing, or a data conduit to an information repository, XML is core to many future projects. As IT managers evaluate XML's potential, they should understand its capabilities and limitations. XML is not the panacea for all technology issues. However, as an enabler, XML can provide a common language for sharing information inside and outside your organization. The key is to use the technology in projects that have a clear return and minimize the investments required.

BIO: Datawatch director, Technical Strategy, Ketan Patel has over 15 years of experience developing and marketing technology products to customers who are cautious about technology adoption. During his career, Ketan has focused on bridging the gap between technology and business, and is passionate about bringing information technology solutions to market.

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XForms - Simplifying the Development of Transactional Web Forms

ASHISH LARIVEE, NOVELL

XForms is a W3C specification that specifies a declarative language for solving a common requirement for advanced user interaction, data validation, and XML processing. XForms is designed to be integrated into XHTML, but is not restricted to being a part of that language alone. It can be integrated into any suitable markup language. This session gives an introduction to XForms and explains how XForms in the client tier of the J2EE application architecture. In addition, it will cover the benefits of XForms and why it is a perfect fit for interacting with J2EE and Web services. A demonstration of XForms in a J2EE environment using an XForms-compliant browser and a sample application further illustrates the advantages.

BIO: With more than nine years of experience in the software industry, Ashish Larivee has designed and developed many enterprise applications across a variety of platforms including Microsoft, Lotus Notes/Domino, and the J2EE platform. In 1999, Ashish joined SilverStream Software, acquired by Novell in July 2002, and has served in various roles in consulting, development, and technical marketing. In her current role, she helps define the strategy and product direction across Novell's Web application development products.

Rich Internet Applications: An XML-Based Approach

CHRISTOPHE COENRAETS, LASZLO SYSTEMS

Rich Internet applications deliver groundbreaking, highly interactive user interfaces that provide a user experience similar and often superior to desktop applications. In this session, we will discuss the benefits of rich Internet applications, review the market landscape, and explore an XML-centric approach for developing rich Internet applications that can be delivered to any browser today. As a practical example, we will demonstrate how to build a rich Internet application version of an Amazon store using an XML-based presentation server to deliver the rich user interface, and the Amazon Web services API to deliver the content.

BIO: Christophe Coenraets worked at Sybase/Powersoft from 1994 to 2000. He started working with Java in 1996 and became the technical evangelist for the company's Java and Internet Application Division. Christophe then joined Macromedia as the company's JRun and J2EE technical evangelist. He joined Laszlo Systems early in 2003.

XML Security Integration Challenges

PHIL STEITZ, AMERICAN EXPRESS

This session will highlight the key security integration challenges faced by application teams developing enterprise solutions using loosely coupled, XML-based interfaces and service-oriented architectures. We will discuss how emerging standards and technologies address the practical security problems faced by development teams, the gaps that still remain, and the tradeoffs and compromises that architects and developers need to make to implement secure solutions today.

BIO: Phil Steitz is vice president, e-commerce applications development at American Express. Phil has over 20 years of experience as a developer, architect, and technology leader involved in distributed systems development. Before joining American Express, Phil served as a middleware architecture consultant, designing large-scale distributed systems for enterprise customers. Phil holds a PhD in mathematics from the University of Maryland.

Attend a **FREE** One Day Security Tutorial

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Strategies for Web Services Security Success

Wednesday, February 25, 2004

Are you a developer, software architect, IT operator, or security administrator deploying or planning to deploy XML Web services? If so, this technical seminar is designed to arm you with the practical information and best practices you need to securely deploy XML Web services in your environment. Many questions will be addressed, such as: Why do Web services need special security? What standards are being created and what do they address? How do I leverage my existing environment to secure Web services? What are the different architectural and technical approaches to solving the problem? How can I centrally manage security in a decentralized environment?

Course Highlights/Benefits

- Overview of XML Web services security: Why is it important?
- Discussion of various standards (WS-security, SAML, XML-Enc, XML-Sig, XKMS)
- Architectural considerations
- Malicious Web services attacks
- Strategies for securing XML Web services today and in the future
- "Nuts and bolts" demonstrations of security solutions

As part of the tutorial, we will show you how to secure your entire XML environment without adding any additional code.

Course leaders

Dan Neiman is a Senior Systems Engineer at Westbridge Technology and is responsible for training and working with real world customers in solving their security and management needs for XML and Web Services. Previously, Dan worked for Tumbleweed Communications where he directed the field engineers in designing and implementing secure email transports. He has also held positions at CSC and the Department of Defense. Dan holds a BS degree in Management and Decision Systems from Carnegie Mellon University.

Peter Bostrom is a Federal Technology Director at Westbridge Technology and works closely with federal customers. Previously, Peter was VP of Product Management at Sequation, a security solutions provider and CTO and co-founder of ExactOne, an Internet-scale distributed search engine. Peter also worked in a variety of sales, consulting and product management roles at Legent Corporation. He was awarded Systems Engineer of the Year award in his first year there. Peter can be heard on National Public Radio's WAMU in Washington, DC as a regular guest on iPublic Interest hosted by Koko Nnamdi and is president of the DC Association of Internet Professionals. Peter holds a BA in International Affairs from The American University after spending three years as an Army Ranger.

Free Web Services Tutorial when you register for a VIP Pass. Seating is limited. Full-conference attendees will receive priority seating for all tutorials; all other seating is on a first-come, first-served basis.

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MX SESSIONS

Enterprise Infrastructure for Rich Internet Applications with Macromedia Flex

KEVIN HOYT, MACROMEDIA

Learn how Macromedia's technology initiative, Flex fits seamlessly into today's new service-oriented architectures (SOA). We'll cover design patterns for rich clients, accessing web services and securing your Flex application.



BIO: As a senior sales engineer for Macromedia, Kevin Hoyt plays a primary role in evangelizing the product line, educating the customer base, and supporting the sales organization. Kevin is also a regular speaker at various user group forums throughout the United States.

Leveraging Web Services

TOM JORDHAL, MACROMEDIA

Web Services technology is changing the way we think about designing and building applications. Come and learn what all the fuss is about, find out exactly which problems web services solve, see web services created and used, and even discover how web services expose the world of .NET.



BIO: Tom has been a Principal Engineer at Allaire/Macromedia for over 6 years and has spent the last 2 years on the front lines of Web Services. He is one of the implementers of Apache Axis and is the Macromedia representative on the W3C Web Service Description WSDL 1.2 working group. Before getting involved in Web Services, he was the technical lead for the ColdFusion on UNIX products. Tom is currently 'back home' working on ColdFusion.

ColdFusion Components

GLEND A VIGOREAUX, BUSINESS SYSTEMS CONSULTANTS, INC.

ColdFusion Components combine the power of objects with the simplicity of CFML. This is the way object-based development was intended to be, and in this session, you'll learn about this combination first hand. Starting with a simple data-driven application, you'll gradually convert it into a highly scalable and manageable multitier application, and in the process, will amaze yourself at just how easy ColdFusion makes this process.

BIO: Glenda Vigoreaux has been a Certified Macromedia Instructor and Developer for the last 5 years. She is currently heading the web development division for Business Systems Consultants, Inc. the most successful reseller and service provider of software for associations in the greater Chicago area.

Rapidly Build Web Services Applications with ColdFusion and Studio

SIMON HORWITH, ETRILOGY

The last year has shown that web services are not just another passing fad and their promise of platform-independent distributed applications has been realized. Compared to other application server platforms, ColdFusion makes creating web services easy. This session covers how to create a ColdFusion Component (CFC) in Dreamweaver, as well as how to expose that CFC as a web service by just toggling one attribute of the CFC. That's right: in ColdFusion, it is just that easy.

BIO: Simon Horwith is Chief Technology Officer of eTRILOGY Ltd., a software development company based in London, England. Simon has been using ColdFusion since version 1.5 and is a member of Team Macromedia. He is a Macromedia Certified Advanced ColdFusion and Flash Developer and is a Macromedia Certified Instructor. In addition to administering the CFDJ-List mail list and presenting at CFUGs and conferences around the world, Simon has also been a contributing author of several books and technical papers.

Code-based Rich Internet Applications with Macromedia Flex

CHRISTOPHE COENRAETS, MACROMEDIA

Learn how to use Macromedia's technology initiative Flex to create rich internet applications. This session will cover using components, layouts, and managers to build user interfaces as well as using Flex's XML-based language to create and manipulate client-side data models.

BIO: Please visit www.sys-con.com/edge for a complete speaker bio.

Using Macromedia Flash with Web Services

Web services, a technology that allows developers to execute remote procedures, are emerging as a revolutionary tool for web application development. Macromedia Flash MX 2004 Professional is a powerful tool for building applications that consume web services built in any technology, including Macromedia ColdFusion, Java, ASP.NET and PHP. In this session you will explore the visionary computing model that web services represent as you use Macromedia Flash components to develop a web service based application. You will learn how to discover web services, work with data and UI components, perform data binding, examine security issues and aggregate multiple web services into a cutting edge web service consumer.

For a Complete List of MX Sessions please visit www.sys-con.com/edge

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- ☐ Project Manager/Project Leader/Group Leader
- ☐ Software Architect/Systems Analyst
- ☐ Application Programmer/Evangelist
- ☐ Database Administrator/Programmer
- ☐ Software Developer/Systems Integrator/Consultant
- ☐ Web Programmer
- ☐ CEO/COO/President/Chairman/Owner/Partner
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500 – 999	04 <input type="checkbox"/>	04 <input type="checkbox"/>
100 – 499	05 <input type="checkbox"/>	05 <input type="checkbox"/>
100 or less	06 <input type="checkbox"/>	06 <input type="checkbox"/>

D. Please indicate the value of communications and computer products and services that you recommend, buy, specify, or approve over the course of one year:

- ☐ \$10 million or more
- ☐ \$1 million – \$9.9 million
- ☐ \$500,000 – \$999,999
- ☐ \$100,000 – \$499,999
- ☐ \$10,000 – \$99,999
- ☐ Less than \$10,000
- ☐ Don't know

E. What is your company's gross annual revenue?

- ☐ \$10 billion or more
- ☐ \$1 billion – \$9.9 billion
- ☐ \$100 million – \$999 million
- ☐ \$10 million – \$99.9 million
- ☐ \$1 million – \$9.9 million
- ☐ Less than \$1 million
- ☐ Don't know

F. Do you recommend, specify, evaluate, approve or purchase wireless products or services for your organization?

01 ☐ Yes 02 ☐ No

G. Which of the following products, services, and/or technologies do you currently approve, specify or recommend the purchase of?

- ☐ Application Servers
- ☐ Web Servers
- ☐ Server-Side Hardware
- ☐ Client-Side Hardware
- ☐ Wireless Device Hardware
- ☐ Databases
- ☐ Java IDEs
- ☐ Class Libraries
- ☐ Software Testing Tools
- ☐ Web Testing Tools
- ☐ Modeling Tools
- ☐ Team Development Tools
- ☐ Installation Tools
- ☐ Frameworks
- ☐ Database Access Tools/JDBC Devices
- ☐ Application Integration Tools
- ☐ Enterprise Development Tool Suites
- ☐ Messaging Tools
- ☐ Reporting Tools
- ☐ Debugging Tools
- ☐ Virtual Machines
- ☐ Wireless Development Tools
- ☐ XML Tools
- ☐ Web Services Development Toolkits
- ☐ Professional Training Services
- ☐ Other [Please Specify] _____

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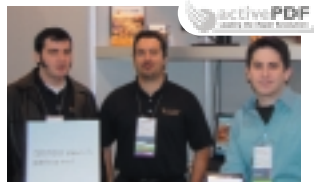
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In last month's issue of *CFDJ*, Simon Horwith reported on MAX 2003 and all it had to offer. Here, we follow *CFDJ* editor-in-chief Rob Diamond as he checked out the floor of MAX 2003.



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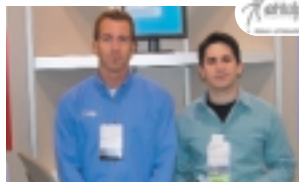
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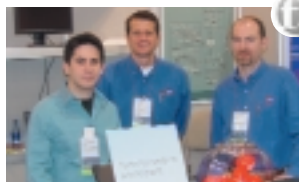
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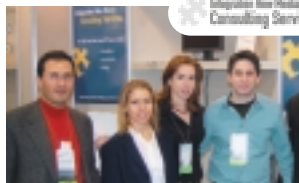
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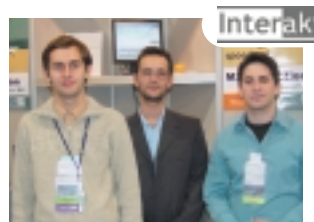
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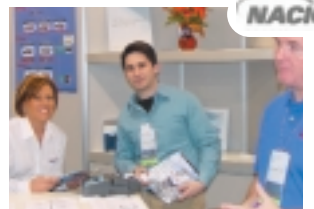
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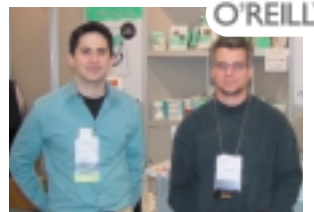
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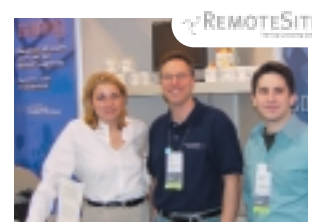
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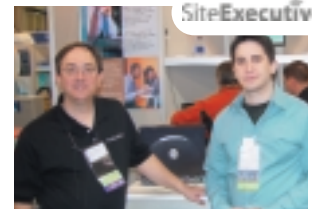
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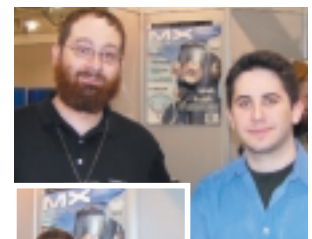
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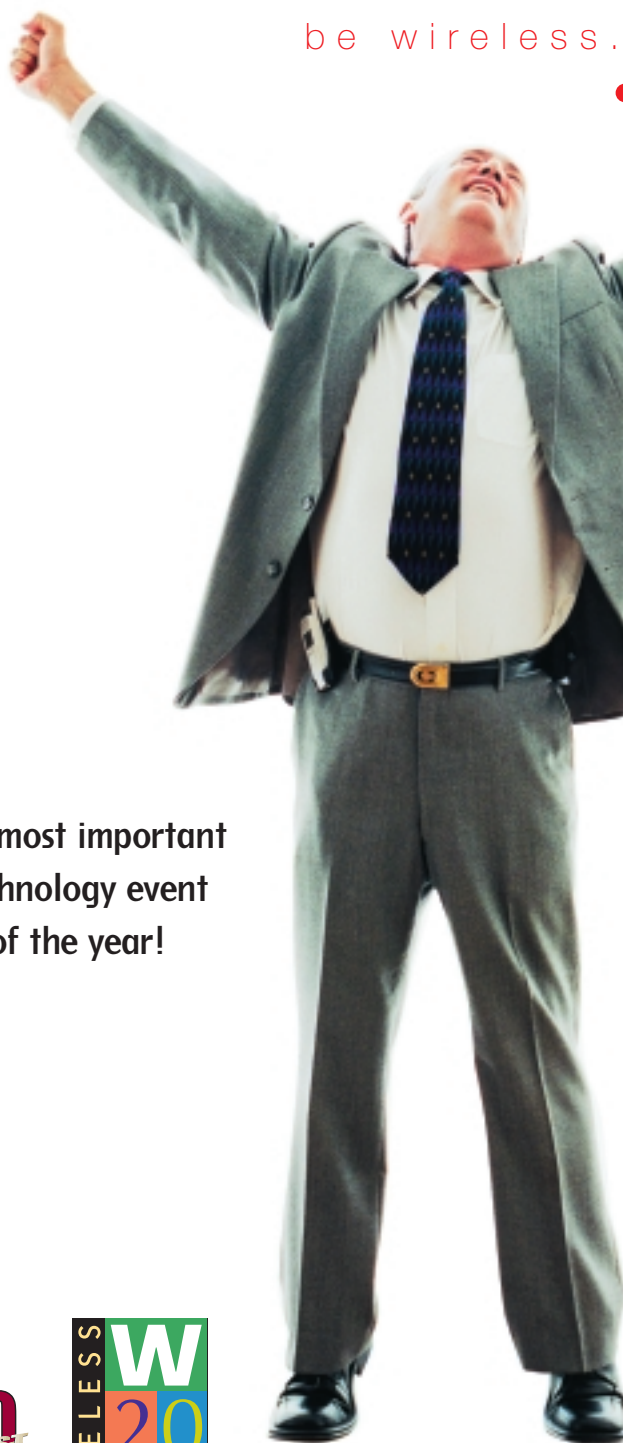


CFDJ Editor Rob Diamond with Macromedia's Ben Forta (above) and Al Ramadan (left)

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