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Faster! Faster! Faster!

By Robert Diamond

I'm proud to report that SYS-CON.com went live with the final release of CFMX 6.1 on its launch date, and we're still up and running, with flying colors. We've participated in the beta program, as I've written about in these pages before, and have had several builds running on our main and secondary servers throughout the whole process.
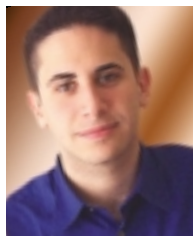
It's been quite exciting to participate in the program, watching each version improve in speed, stability, and features. The final release is one that the Macromedia engineers should be proud of, and I wouldn't hesitate to refer to it as one of the most significant 100% customer satisfaction–oriented software updates I've ever seen.

A lot has been said about the speed improvements in this release, and there are now some hard numbers and performance statistics to back up the obvious visual improvements in speed that those of us using it have been reporting. Quoting Ben Forta (and who better to quote?), "At the time that this article went to press, initial testing with identical example applications on identical hardware revealed significant performance gains over ColdFusion MX, which was already faster than ColdFusion 5, which was already faster than…you get the idea. ColdFusion MX 6.1 is 172% faster than ColdFusion 5 and 160% faster than ColdFusion MX."

The speed improvements are great – and noticeable – and I can't possibly stress that point enough. Faster! Faster! Faster! There's a great article up on Macromedia's DevNet at www.macromedia.com/devnet/mx/coldfusion/articles/performance_61.html by Jim Schley of the ColdFusion Quality Assurance Team that's well worth a read for more information on this topic.

At the same time we were upgrading our servers to CFMX 6.1 here at SYS-CON, we also executed some other long-planned infrastructure changes that helped provide some additional significant gains in performance. These changes were implemented as a precursor to several planned updates to all of our publication sites that we'll be rolling out over the next few months. Previously running Microsoft IIS/Win2K Advanced Server, we switched over all of our Web servers to run off of Apache, utilizing the mod_gzip add-on module.

As the official description of mod_gzip states, "mod_gzip is an Internet Content Acceleration module for the popular Apache Web Server. It compresses the contents delivered to the client."

What does this mean in simple terms? Significantly smaller pages being transferred, and a drastic reduction in bandwidth usage. A few hours after installing it, I took a panicked phone call from our ISP who, based on the drop in usage, was sure that we had gone down. He couldn't find anything wrong with our T-1s or routers though. The main page of www.sys-con.com, for example, went from transmitting a bloated 70K to a lean, mean 19K. Multiply those same numbers outward toward the rest of the site, and take into account the number of users, and you can see where this is going….

We'll cover the process more over the next few months, including our own results, but in the meantime – there are some very helpful threads on this process on the Macromedia Support Forums (http://webforums.macromedia.com/coldfusion/messageview.cfm?catid=3&threadid=221027&highlight_key=y&keyword1=apache&keyword2=gzip), and you can find more information on mod_gzip (http://sourceforge.net/projects/mod-gzip), and Apache (http://httpd.apache.org).

This move from IIS to Apache isn't for the faint of heart, as it means moving from lots of user-friendly visual wizards to a text file–based configuration, so I highly recommend reading up on the process first, and of course not testing it on live machines. When you're ready to do the setup on your actual servers, do the setup on another HTTP port until everything is up and running smoothly. Safety first!

P.S. Congratulations to Ben Forta on his 50th *CFDJ* column!

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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Tales from the List

Searching for answers

Despite what the title of this month's article implies, this installment of *Tales From the List* is not about a *CFDJ*-List thread regarding the meaning of life. It's about something much more important: metadata.

Metadata, in a nutshell, is information about information. It's how data is described, categorized, and conceptualized, and is also commonly used to show a relationship between different pieces of information. Some sort of metadata implementation is often required to meet Web application business requirements, and this month's featured *CFDJ*-List thread is all about a post inquiring about how best to meet such a business requirement.

The thread we will examine began when Tammy Hong, a *CFDJ*-List regular, wrote to the List saying that she had been asked to build an application that allows end users to search for images based on keywords, and she had two dilemmas. One dilemma was whether to use Access or SQL Server for the database.

Knowing that SQL Server is more robust, she's looking for more detailed reasoning to use that is specific to the application business requirements. The second dilemma was how to best structure the database so that when an end user submits a search, only images with matching keywords are returned. She was already aware of the best practice of storing the location of the image as a string in the database (rather than the image itself), but was unaware of any other "best practices" that apply to the design of an application with her requirements.

I-Lin Kuo, a long-time *CFDJ*-List regular well-known for his database expertise, suggested that this type of search functionality is best implemented using text indexing and that, because Access does not support text indexing, SQL Server would be a much better RDBMS platform.

He added that text indexing is much faster and allows for stemming and ranked matches,

By Simon Horwith

although it does have a steeper learning curve because RDBMS proprietary SQL extensions are used to leverage it. He then noted that he advises never performing a LIKE "%word%" SQL search because of the performance impact.

Kola Oyedeji responded, stating that he assumed I-Lin was referring to SQL Server Full Text Indexing, and wanted to know whether I-Lin knew of similar implementations on other RDBMS platforms? I-Lin responded, stating that Oracle has "Text Indexing," which in his experience is better than SQL Server's "Full Text Indexing," though he certainly does think the SQL Server implementation is pretty good.

He went on to further clarify his statement about LIKE searches, pointing out that in a LIKE search every row of data has to be looped over, whereas in text indexing, the database creates a "dictionary" of words that is optimized to be read very quickly to look up matching rows by applying a "matching algorithm" to the index. He pointed out that the

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WysiDraw 1.0

Fig Leaf's new collaboration RIA

Have you ever wanted to chat simultaneously with two or more of your friends, but each of you uses a different chatting medium? Have you ever participated in a teleconference where you had the pleasure of waiting for the administrator/moderator's e-mail of presentation modifications? Perhaps you were that moderator, frustrated that the company's chosen third-party collaboration platform had once again crashed, leaving your presentation dead in the water.

Well, my friend, to help solve this problem, Fig Leaf Software (www.figleaf.com) has introduced WysiDraw 1.0 (http://products.figleaf.com/). Formerly known as Davinci, WysiDraw leverages Macromedia's Rich Internet Applications (RIA) (www.macromedia.com/resources/business/rich_internet_apps/) platform to provide a cross-browser annotation and collaboration solution.

By Sarge

Not Just Another Component

Hey wait a minute, isn't WysiDraw just another cool Flash MX component package that just missed one of Macromedia's DRKs (see Christian Cantrell's July 2003 article, "Macromedia's DevNet Resource Kit: Just the Beginning?" *CFDJ*, Vol. 5, issue 7). True, fundamentally, WysiDraw is a Flash MX component that allows developers to add colors, scribbles, texts, and geometric shapes as layers on top of background JPEGs.

These layers are in a fully moveable (including forward and backward) stack, providing users with various levels of emphasis. Fig Leaf even embedded functionality to print user annotations. And because it was built with Flash MX technology, WysiDraw is both cross-browser and cross-platform accessible via any device running the Flash 6 player

(www.macromedia.com/software/flashplayer/).

Now let's look deeper… WysiDraw is currently available in two editions: Component and HTML.

Component Edition

The WysiDraw Flash MX component can be embedded into any Flash MX movie and made extensible with a firm knowledge of ActionScript. It includes its own Developer's API that's installed into the Flash MX Reference panel when you run the Macromedia Extensions Manager file (WysiDraw.mxp). Code hints are available in the Actions Frame (Expert View) for object instances named with the "_wd" suffix (see Figure 1). The WysiDraw component can also easily integrate with the Flash Communication Server MX (www.macromedia.com/software/flashcom) to create real-time whiteboard applications. WysiDraw users can then utilize the audio, video, and chat room FlashCom services to create a full collaboration suite.

(Note: WysiDraw is compatible with Flash Communication Server 1.0 and 1.5.)

HTML Edition

This is a stand-alone WysiDraw instance that can be embedded into HTML. Developers can either: hard-code images into the HTML source; leverage application server pages (ColdFusion, ASP, etc.) to dynamically load images – Fig Leaf includes custom coding for ASP, ColdFusion, and PHP; or allow users to create their own images in an empty drawing area. Fig Leaf has also created the WysiDraw XML DTD for the purpose of capturing real-time annotations as XML packets (see Listing 1). These packets can be saved to back-end data sources and then dynamically retrieved to regenerate the original image.

The Interface

WysiDraw includes a fairly intuitive interface (see Figure 2), including tool tips for each button. It is divided into four areas:

- *Resource menu:* Contains functions that control the component, including buttons for such standard commands as New, Copy, and Paste. The layer control buttons (Move Forward, Move to Back, etc.) are great features that empower even novice graphical tool users. An added bonus is the Print fea-

Listing 1: Davinci XML packet

```
<davinci version='1.0' background='../images/eye.jpg'>
    <line id='0' depth='0' x0='257' y0='24' x1='319' y1='48' arrows='2' strokeColor='0'
strokeWidth='2' />
    <text id='1' depth='1' x0='153' y0='11' x1='250' textColor='0' textSize='10'
textFont='_sans' bold='false' italic='false' text='Medulla Oblongata'/>
</davinci>
```

ture, which allows users to print their images – including the annotations.

What's missing from this menu is an inherent Open and Close functionality. Sure developers can programmatically load images – including the captured XML renderings. But a native Open/Close feature that allows the uploading of different images without reloading the entire document will make WysiDraw a more powerful collaboration tool. New features in version 2.0, which is due out in October 2003, are Undo, Redo, Zoom, and the ability to load, show, and hide multiple annotation layers.

- **Properties menu:** This menu allows users to control their markup components – i.e., Bold, Stroke, Fill, etc. Items are displayed for all drawing tools other than the Select tool. This allows users to change the display of their annotations; for example, changing text color, point size, and font, or adding arrows to a line or curve.

  The properties menu has some setbacks that take away from its functionality. For example, the text tool size is difficult to manipulate. Another detractor is the limited text-editing tools. Fig Leaf should implement alignment (left, centered, right, justify) properties, lists (bullets and numbers), underline, etc., for the text boxes. These are standards in today's graphical interfaces.

- **Drawing menu:** Contains the graphics tools used for image markup. These include the familiar graphic tools such as Select, Line, Oval, Curve, Freehand, Rectangle, Oval, and Text. Select is the default and most utilized tool. The one standard graphical tool missing is the Eraser tool. Fig Leaf should consider adding this tool in the next version to facilitate corrections. Currently you have to use the Cut tool (or the Delete key in the HTML edition) to make deletions.

- **Drawing area:** This is the user's workspace where all markups are made. All images are loaded or created here. Users select the tool from the Drawing Menu at left and mark up the image. When in collaboration mode, a Draw/Release button is displayed to allow a user to grab control of the drawing area while others watch. When the user has finished his or her annotations, clicking Release relinquishes control.
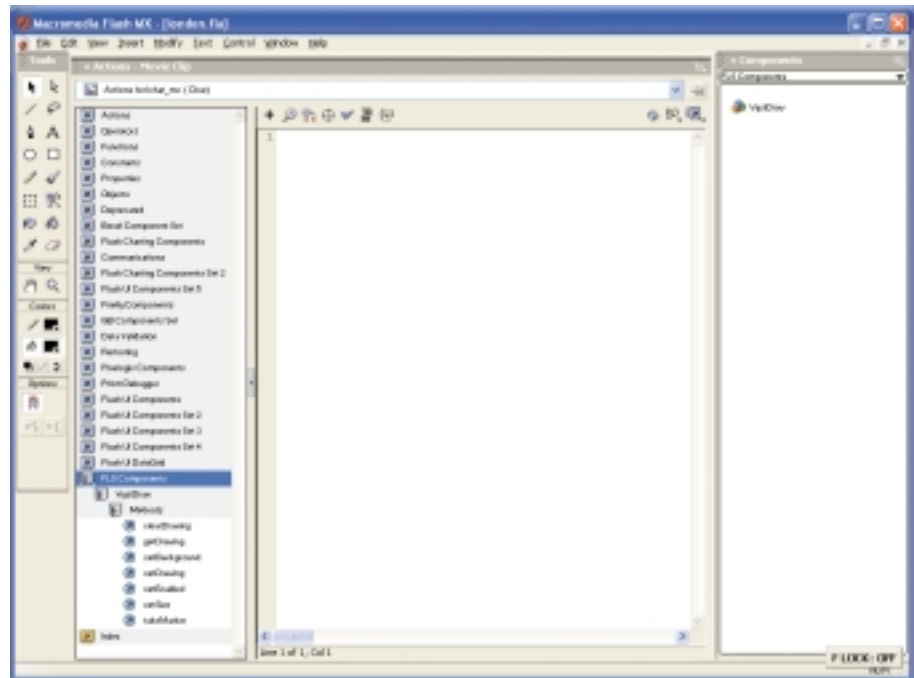
Figure 1: FLS Components
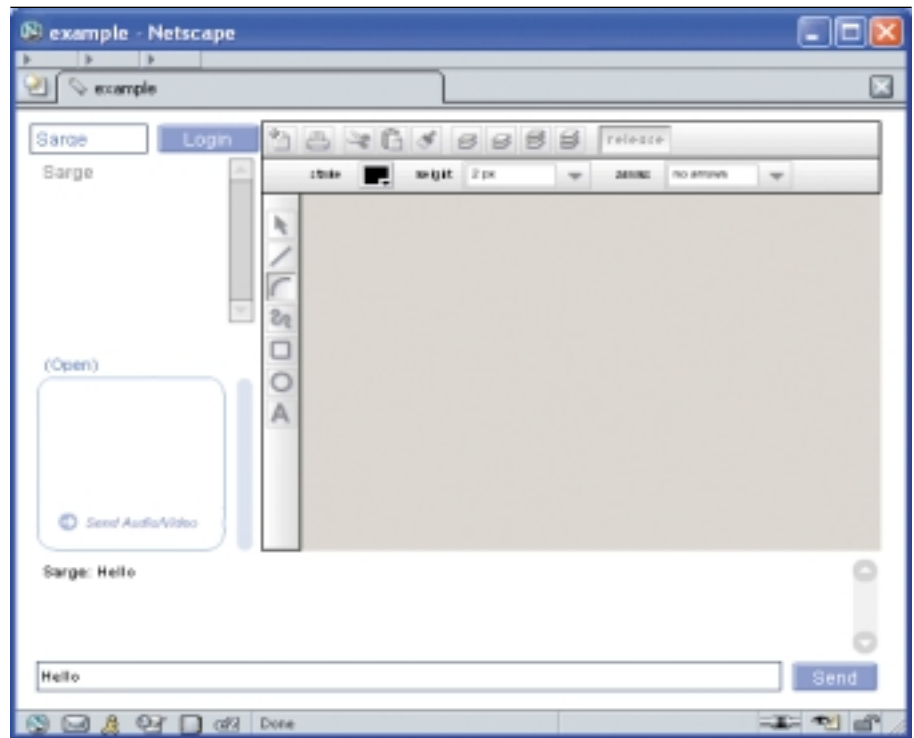
Figure 2: WysiDraw Interface

Installation and System Requirements

System requirements are pretty straightforward. Both editions require the Flash 6 player (6.0+) as a client. The latest Flash player is available for download from Macromedia. The Component edition requires the Flash Communication Server; the HTML edition requires only a Web server.

Use the WysiDraw.mxp file to install WysiDraw Component and Developer API into the Flash MX authoring environment. The FLS Components will be avail-

Figure 3: A WysiDraw Whiteboard application

references to enable quick deployment. The basic steps are:

1. Drag the WysiDraw component to the Stage and give it an instance name. *(Note:* Remember to add the "_wd" suffix to the instance name to enable the coding hints in the Action Frame.)
2. Add the Simple Connect control from the Communication Components panel. Simple Connect is necessary to provide the connection interface to the Flash Communication Server.
3. Register your WysiDraw instance name with the Simple Connect Communication Components array in the Properties panel.
4. Add any other communication components you want to have in your applications: video, audio, or chat; and also register them with Simple Connect.
5. Create a main.asc file with the following commands:
   load(:components.asc");
   load(:components/wysidraw.asc");
   and place it in the appropriate Flash Communication Server application directory.
6. Publish your movie (to create the HTML and .swf) and place them on your Web server.

Conclusion

WysiDraw is more than just another component for extending Flash MX movies. It provides a dynamic standalone HTML vector-based imaging tool, and a component architecture for extending Whiteboarding capabilities in Flash Communication Server Rich Internet Applications (see Figure 3).

Although the current 1.0 release supports only JPEG images, the tool performs as advertised, with plenty of functionality to satisfy savvy collaboration tool users. So if you are a lon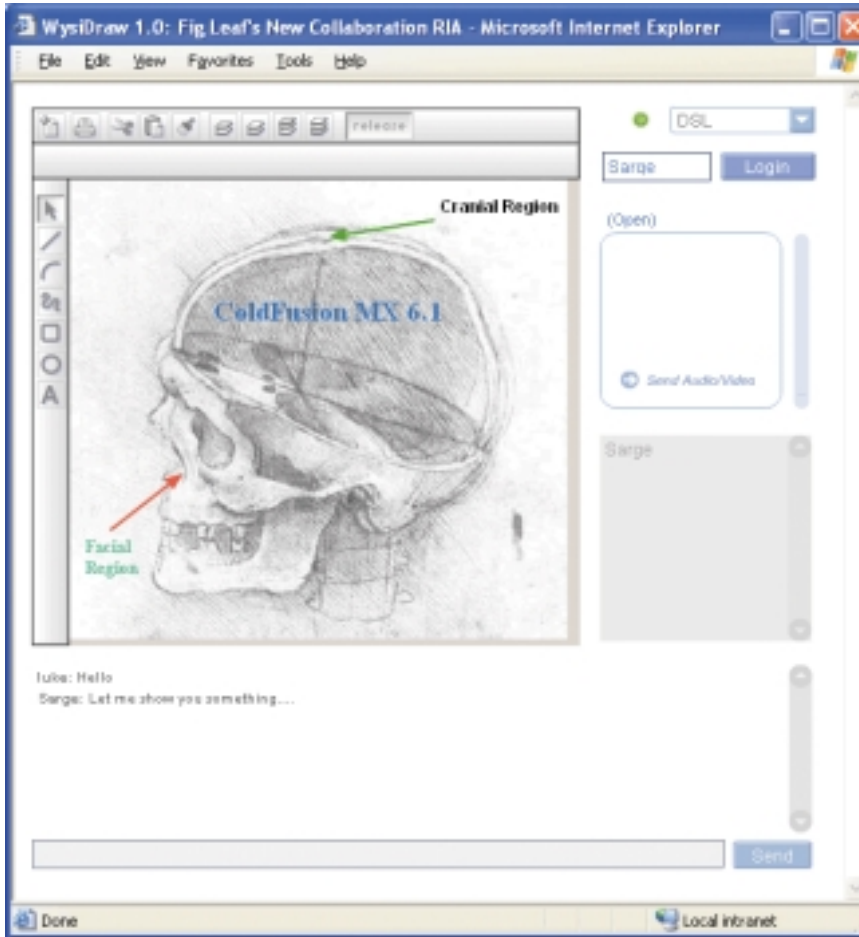g distance–learning student looking for a cool tool to facilitate those online team groups, have your university administrators give WysiDraw a try.

able in the Components panel menu. Expand the Reference section of the Actions Frame to reveal the FLS Components help. Next, install the wysidraw.asc file into the Flash Communication Server's Scriptlib\Components directory. This file contains the server-side

```
Listing 2: WysiDraw ColdFusion Custom Tag

<cf_wysidraw
    height="400"
    width="380"
    id="wysidraw"
    bgcolor="##FFFFFF"
    swf="../../wysidraw.swf"
      image="../images/skull.jpg"
    form="1"
    formfield="wysidrawdata" value=
    "#qdata.wysidrawdata#">
```

ActionScript for the WysiDraw objects and functions.

For the HTML Edition, place a copy of the WysiDraw.swf in a directory accessible to your Web and/or application server. Use the HTML <OBJECT> tag with nested <PARAM> and <EMBED> tags for an HTML deployment. Use the ColdFusion custom tags (<CF_WYSIDRAW>) and ASP subroutine (wysidraw.asp) that are provided, to integrate WysiDraw in those respective environments (see Listing 2).

(Note: WysiDraw is compatible with ColdFusion 5.0 and MX.)

Whiteboard Example

Familiarity with the Flash MX authoring environment and the Flash Communication Server application directory structure is essential to creating applications with WysiDraw. Fig Leaf provides adequate User and Developer

About the Author

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Fusebox 4

Worthy of your attention

The latest version of Fusebox – version 4 – has been taken out of beta and placed into general availability. Over the last seven years, Fusebox has grown from a collection of best practices and snippets of code into a full-featured, robust framework on which developers can build true Web applications.

Over these seven years, Fusebox has become the overwhelming favorite of ColdFusion developers, and it has been ported to JSP, PHP, and Lasso. Organizations as large as UPS, Casio, Dell Computers, the U.S. Air Force, the U.S. Army, and Rooms to Go employ Fusebox on their Web sites, intranets, and extranets.

By Hal Helms

Fusebox is built around the idea of a central controller (the Fusebox) that handles requests (fuseactions) and delegates them to smaller, focused controllers (circuits). These components, in turn, delegate work to individual code files (fuses). Fusebox comes with a set of core files (downloadable from fusebox.org) that implement the framework.

Language-Independent XML

This latest version of Fusebox was almost a year in the making, and comes with added features, bug fixes, and improved performance. The most obvious change is in the controller elements. Previously, an fbx_switch.cfm file found in each circuit contained ColdFusion code to determine which actions were to be taken for each request. For example, this code might be used for a login circuit that was meant to respond to the fuseactions, login, and validateLogin (see Listing 1).

In Fusebox 4, the fbx_switch file is replaced with a circuit.xml file. This file has no ColdFusion code; the file consists of nothing but XML (see Listing 2).

Why the move to XML? XML offers Fusebox architects the ability to state their intention without resorting to code. But what's wrong with code? Nothing, of course, but a code-independent XML grammar allows the underlying Fusebox core code to change without affecting the code written for an application. It provides an interface between the architect's intention and the code's implementation.

This means that the core code for, say, a future Fusebox 5 could be substantially different from Fusebox 4, but not break any Fusebox 4 application code. The issue of backwards compatibility must concern providers of any technology. The use of a stable interface that is later translated into implementing code is one of the best ways of dealing with this problem.

XML Grammar

The purpose of the circuit.xml file, where this grammar will be used, is to define the meaning – not the implementation – of a fuseaction. For that reason, the XML grammar set used in these files is quite small; implementation details should be handled by fuses. Even with a constrained grammar set urging them against it, Fusebox architects must be careful to avoid writing implementation code in circuit files. Table 1 lays out the XML elements that can be used in the circuit.xml file.

As with all XML, the circuit.xml file must be well-formed – that is, it must conform to the rules for proper XML usage, such as the use of a closing slash in elements that have no closing tag.

While the XML file initially looks very different from Fusebox 3's fbx_switch file, experience among the beta group has shown that adapting to the new format is fast and easy for existing Fuseboxers.

Performance Through Parsing

One of the largest changes to Fusebox is largely invisible to Fusebox programmers. In previous versions of Fusebox, the core files were read on each request and all processing was handled dynamically – that is, at runtime. This created an overhead common to all dynamic processing models.

Fusebox 4 handles things very differently. Much of what had been dynamically determined is now handled in a separate parsing cycle that executes prior to runtime. The Fusebox 4 XML files are parsed and a single file is produced for each fuseaction, using the syntax: parsed.circuitname.fuseactionname.cfm. All such files are automatically placed in a parsed directory.

At runtime, index.cfm (or whatever the default file is) calls the Fusebox 4 runtime file, fusebox40.runtime file. The first job of the runtime file is to ensure that the parsing cycle has been run – and that no changes to XML files have been introduced since the time last parsed. If the runtime file code determines that the parsed files are not up

to date (or are missing altogether), it calls fusebox40.loader, fusebox40.parser, and fusebox40.transformer, all of which work together to produce the parsed files located in the parsed directory.

By preparsing the code, the runtime logic needs only to include the appropriate parsed file. That is, if a request is made of the application to execute the fuseaction, home.main, for example, the runtime code (once it has assured itself that the existing state of parsed files is current) includes the file, parsed/parsed.home.main.cfm. By resolving as many dynamic issues as possible before runtime, performance is greatly improved.

Extending Fusebox with Plug-ins

Fusebox 4 also introduces the idea of plug-ins. Plug-ins provide developers a way of extending Fusebox's core functionality without having to tinker with the core Fusebox code. If the Fusebox core file is written to accommodate virtually any developer working on any project, and the application code is written to deal with individual fuseaction requests, plug-ins inhabit the middle ground – code that should run across multiple fuseactions within an application.

What can plug-ins do? Virtually anything – from logging requests to implementing security to... well, anything. Plug-ins allow the programmer to add application-wide functionality that the Fusebox core designers did not or could not anticipate.

Once the plug-in code is written, it is placed in the plug-ins directory. The plug-in designer determines at which of six plug-in points he or she wishes the plug-in code to run. This decision is registered in another XML file, fusebox.xml, located in the root directory.

The plug-in points reflect different stages of a fuseaction life cycle, such as preprocess (before anything else happens), prefuseaction (immediately prior to a fuseaction call), postfuseaction, and postprocess. The other two plug-in points are not temporally based, but occur when exceptions occur.

Plug-ins provide great extensibility to Fusebox without compromising the integrity of the Fusebox core files. During the beta cycle, several members wrote plug-ins to deal with common issues (such as security) and we expect to see plug-ins used as commonly as custom tags.

Listing 1

```
<cfswitch expression="#attributes.fuseaction#">
    <cfcase value="login">
            <cfset XFA.submitForm = "login.validateLogin" />
            <cfinclude template="dsp_LoginForm.cfm" />
    </cfcase>

    <cfcase value="validateLogin">
            <cfset XFA.successfulLogin = "home.main" />
            <cfset XFA.failedLogin = "login.login" />
            <cfinclude template = "qry_CurrentUser.cfm" />
            <cfinclude template = "act_ValidateLogin.cfm" />
    </cfcase>
</cfswitch>
```

Listing 2

```
<circuit access="public">
    <fuseaction name="login">
                    <xfa name="submitForm" value="login.validateLogin" />
                    <include template="dsp_LoginForm"/>
    </fuseaction>

    <fuseaction access="internal" name="validateLogin">
                    <xfa name="successfulLogin" value="home.main" />
                    <xfa name="failedLogin" value="login.login" />
                    <include template="qry_CurrentUser" />
                    <include template="act_ValidateLogin" />
    </fuseaction>
</circuit>
```

XML Element	Purpose	Example
`<set>`	Creates/sets a variable and provides its value.	`<set name="foo" value="bar" />`
`<xfa>`	Sets an exit fuseaction (XFA) and provides its value.	`<xfa name="success" value="home.main" />`
`<include>`	Queues a file to be included at runtime.	`<include template="foo.cfm" />`
`<do>`	Delegates work to another fuseaction, allowing for multiple fuseactions in a single HTTP request. The action attribute points to a valid fuseaction.	`<do action="foo.bar" />`

`<if></if>`	Provides a conditional for any other XML element.	`<if condition="attributes.foo IS session.foo">`
		`  <do action="foo.bar" />`
		`</if>`

`<loop></loop>`	Provides for a loop, into which any other XML elements may be placed. Iterates while condition is true.	`<loop condition="foo IS bar">`
		`  <include template="foobar.cfm" />`
		`</loop>`

`<relocate>`	Causes a server-side redirect.	`<relocate url="#self#?fuseaction=home.main" />`

Table 1: Allowable XML elements in circuit.xml files

Exceptions, Layouts, Accessibility, and Content Components

As good as Fusebox 3 was, it suffered from one unfortunate liability: its exception handling was poor, and Fuseboxers have suffered with obscure exception messages since its release. Built into Fusebox 4 is the ability for the programmer to specify a module to call when an exception is thrown. The particulars of handling exceptions can then be handled by a plug-in. This provides enormous flexibility for a wide variety of needs.

Layouts in Fusebox 3 were exceptionally helpful. In Fusebox 4, they just get better. While Fusebox 3 tied layouts to the physical directory structure, this restriction is gone in Fusebox 4. Layout files lose their special status and simply become a fuseaction, making them easier to build and to employ.

While Fusebox 3 existed uneasily with ColdFusion's <cfflush> tag, this is no longer the case; developers needing to use <cfflush> can do so with impunity. The changes made to layouts also make Fusebox 4 more accessible to users with visual impairments by supporting Section 508 accessibility standards. Especially for government agencies – often charged with "508" issues – this represents a breakthrough.

Fusebox 4 also introduces the idea of granularizing content by providing content component variables that can be combined to form a larger Web page. Content component variables (CCVs) allow fuseactions to concentrate on building pieces of content while deferring the placement and usage of

"How disruptive is the move from Fusebox 3 to Fusebox 4? Surprisingly, not very"

these components to another fuseaction. One obvious use for this technology is the building of portal-style pages, but it can be used whenever developers want to make display code more reusable. CCVs allow for far greater reusability of these components than was available previously.

Is Fusebox 4 for You?

So, with all this "new stuff," how disruptive is the move from Fusebox 3 to Fusebox 4? Surprisingly, not very. In a typical Fusebox application, well over 90% of code written is in fuses. None of this code changes at all. Members of the Fusebox 4 beta group were pleased by how simple porting Fusebox 3 applications to Fusebox 4 was. One member related that an application that had taken over a month to build was upgraded to Fusebox 4 in less than two hours.

Is Fusebox 4 for everyone? Certainly not. Some developers have created their own frameworks that work well for them and their team. Some chafe at the idea of working within any framework. Still others want to use a true object-oriented framework, while Fusebox 4 is solidly procedural. (For more information on an object-oriented framework see the article in the August issue of *CFDJ*, "Mach-II: Breaking the Procedural Barrier, Vol. 5, issue 8.")

Is Fusebox for you? Of course, you're the only one who can make that judgment, but if you're looking for a powerful, robust, mature framework on which to build solid ColdFusion applications, Fusebox 4 definitely deserves your attention. For more information, including sample applications and core code, visit fusebox.org. If you're interested in attending the Fusebox conference in Las Vegas, visit www.cfconf.org/fusebox2003.

Note: Thanks to John Quarto, Brian Kotek, Sandy Clark, Perry Woodin, and Brian LeRoux for making available to me a pre-release copy of their upcoming book, *Discovering Fusebox 4*, available at techspedition.com.

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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A Case for Accessibility

As the world becomes more reliant on the Internet, accessibility will become more of an issue

For the last two years, accessibility has been an issue for Web designers and programmers who work with and for the federal government. Slowly but surely, the concepts of accessibility will also become an issue for commercial and private Web sites as well. Accessibility in the Web world covers making a Web site's contents available to all users, both the vast majority of able-bodied users and those who have some sort of functional limitation.

Countries other than the United States require Web site accessibility as well, and each country's laws affect different types of Web sites. While your Web site might not be required to be accessible for one country, it might well fall into the accessibility guidelines for another. Countries that have accessibility requirements include: Australia, Canada, the EU, Belgium, Denmark, Finland, France, Germany, Greece, Japan, Ireland, Italy, Luxemburg, Netherlands, New Zealand, Portugal, Singapore, Spain, Sweden, and the United Kingdom.

By Sandra Clark

Who Does Accessibility Affect?

For the purposes of standards, accessibility issues affect 15–30% of the general population. These are people who might otherwise have access to your Web site, but are unable to utilize it for one (or possibly more) of the following reasons:

- **Blindness:** For the purposes of the Web designer, this is probably where the most attention rightly should be spent, for the simple reason that the Web has inherently been a visual medium. Most of the information on the Web is in either a graphical or textual format. People who are blind commonly utilize a special type of browser known as a speech browser. These browsers interpret HTML and read the contents out loud. Therefore, graphics that contain words are not available to these users.
- **Vision impairments:** Blindness is not the only visual impairment. People who have poor eyesight are also worthy of consideration for your Web site. Not everyone can read 10-point or even 12-point text. As the general population ages, the more important it becomes to make your Web site accessible to this group.
- **Deafness:** People who have aural impairments can also have difficulty in negotiating a Web site that depends on spoken cues. In this instance, a video of a corporate president talking about an important topic regarding his or her company would simply be an exercise in frustration for someone who cannot hear what is being said.
- **Color blindness:** About 8% of men and 0.5% of women have some form of color blindness. For some Web sites this could translate to 1 in 12 visitors. Color-blind people will have difficulty viewing Web sites if the colors of the Web site are such that there is no contrast. Forcing these people to your color scheme could force them to find an alternative to your site.

To demonstrate this, consider the screen shots shown in Figures 1 and 2. Both were taken off the same Web site. However, one was run through a color blindness simulator, www.q42.nl/demos/colorblindnesssimulator/. (*Note:* if you are already color blind, these images should look identical.)

So, why make your site accessible if the law isn't forcing you?

Unless you design Web sites for a government entity, United States or foreign, or work for an institution that receives federal money, chances are accessibility is not an issue that has cropped up for you. However, laws change. In May 2003, the Department of Commerce Patent and Trademark Office posted a press release stating that all purchases of products and services will have to meet, and be certified as meeting, the accessibility standards of the United States Rehabilitation Act. This not only includes software sales, but also the development and deployment of Internet and intranet applications. So, if your company makes a content management solution or another custom intranet application that you want to sell to the Patent Office, your product must be accessible. As the world becomes more reliant on the Internet for information and access to content that cannot be found elsewhere, accessibility will become even more of an issue.

For a number of years, lawsuits have been filed over equal access to commercial Web sites based on the Americans with Disabilities Act (ADA). Although, to date, none of these lawsuits has been won, a number of settlements have occurred:

- ***Bank of America:*** In March 2000, an Americans with Disabilities Act (ADA) agreement was reached between the California Council for the Blind and Bank of America to install 2,500 talking Automatic Teller Machines (ATMs) in Florida and California and to ensure that its Web sites and online banking services are accessible to people using screen-readers.

- ***Connecticut Attorney General's Office:*** In April 2000, the National Federation for the Blind (NFB) filed an ADA lawsuit against the Connecticut Attorney General's Office, which provided links to four inaccessible online tax filing services on its Internal Revenue Service's official Web site.
  – The four tax filing services (Intuit, HDVest, H&R Block, and CioCia) voluntarily agreed to begin making their Web sites accessible to the sight-impaired in time for the next tax season.

- ***Southwest Airlines and American Airlines:*** In October 2002, a federal judge ruled that a civil case sponsored by Access Now and Robert Gumson against Southwest Airlines should be dismissed. The judge granted Southwest's motion for dismissal of the case, ruling that Southwest.com is not "a place of public accommodation as defined by the plain and unambiguous language of the ADA." American Airlines was not granted a dismissal.
  – This case came out in Southwest Airlines' favor. However, the company expended considerable time and money to defend itself in this lawsuit. What's more, the negative publicity couldn't have been good for the company.

It also makes good business sense for Web sites to work toward an accessible standard. As pointed out earlier in this article, between 15 and 30% of the United States general population has a functional limitation that limits how they can consume the information found on your Web site. To put it another way, 45–90 million people in the United States alone cannot access your Web site to read what you have to say or to buy what you are selling. Most stores are designed to allow people who are disabled to purchase their products, why not the Web?

Unfortunately, not even all government Web sites are accessible. As of this date, in the United States, only federal agencies and their departments, as well as institutions that receive federal money, are required to comply with the accessibility standards. Unfortunately, those who make the rules for us do not at this time need to comply with them.

In November 2001, the Congressional Office of Compliance recommended that Section 508 be made applicable to all offices on Capitol Hill covered by the Congressional Accountability Act, including the Government Printing Office (GPO), the General Accounting Office (GAO), and the Library of Congress. These offices, including all
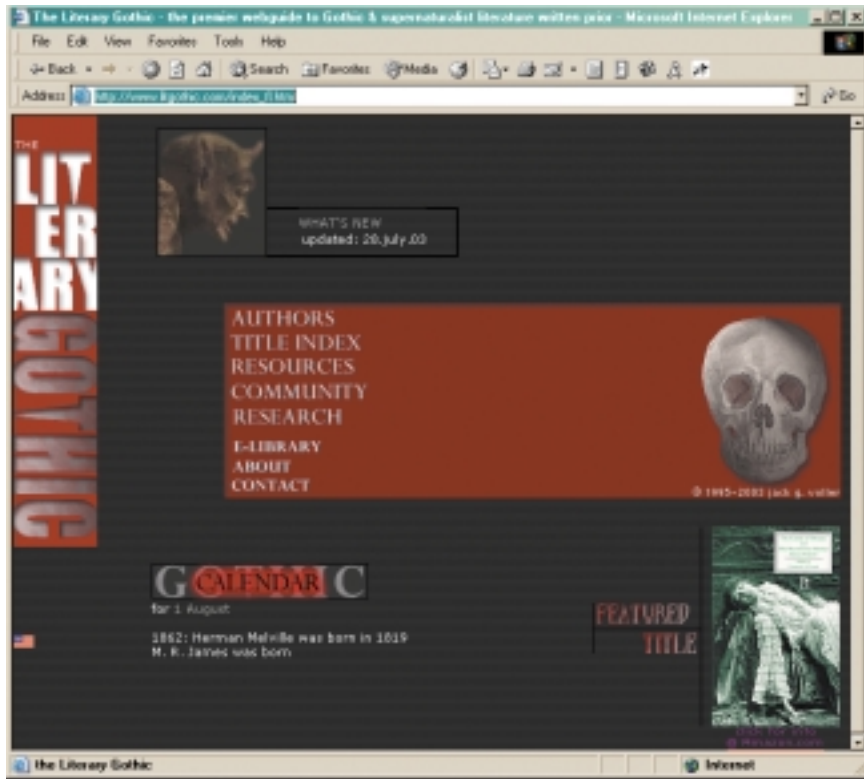
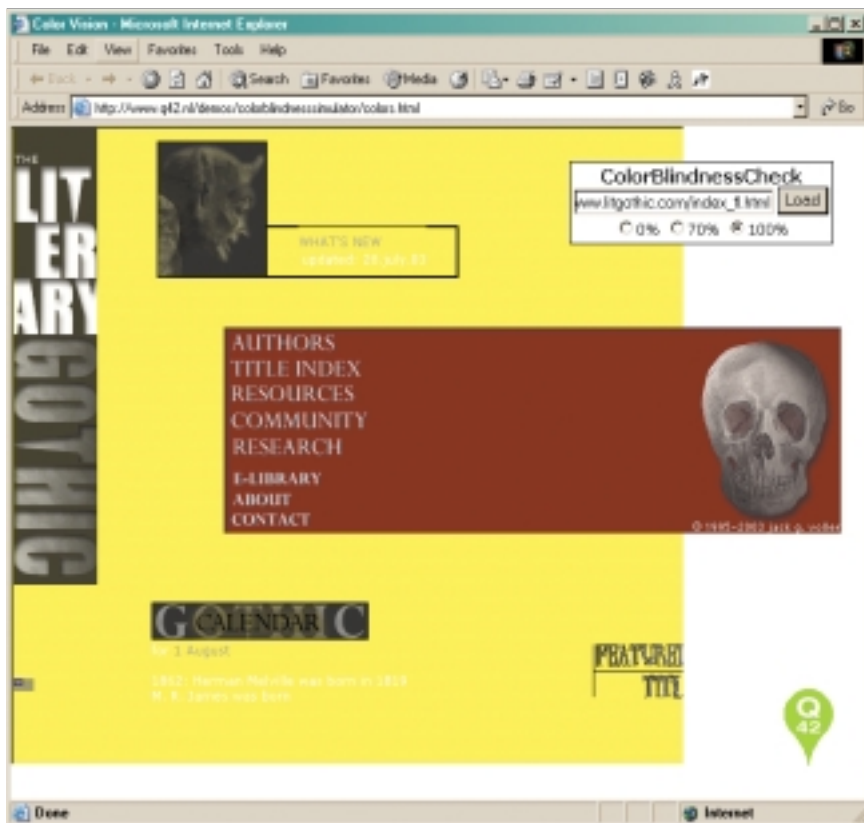**Figure 1:** Web page shown for normally color-sighted people

Figure 2: Web page as seen by color-blind person

members of the United States Senate and the United States House of Representatives, are under no obligation to make their Web sites available to those with disabilities.

In December 2002, I went ahead and ran 204 U.S. federal agency and departmental home pages through a series of validation tests. These are the entities that are required by law to be accessible. The results astounded me.

Out of the 204 pages I tested, only 77 pages (38%) actually passed a validation test. Even less were readily accessible in the speech browsers I ran them through. (You can see both the survey results and raw data on my Web site at www.shayna.com under the articles section.)

The U.S. government is required by law to make all of its sites accessible, both public Internet and private intranets, so why aren't they doing it? My thought is that like most of us, people in government simply don't know how or think it's too hard to do.

Conclusion

Whether you work for an entity that's required to make their online information accessible now, or for a company that provides sales or services to the general public, accessibility is an issue that needs to be looked at. With 45–90 million people among the disabled, the market is too large to ignore.

This article is the first of a series that explores accessibility. The next article will be a detailed discussion of what Section 508 and the Web Accessibility Initiative actually cover, as well as information about speech browsers and validation.

About the Author

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www.macromedia.com/go/max

ColdFusion and SQL Server Permission Integration

USING DTS PACKAGES
PART I

In this article, I'll show you how to set up a ColdFusion 5 server and a Microsoft SQL Server 7.0 that will execute a DTS package through the ColdFusion server. The main objective is to create a DTS package that will result in file output that will be delivered to a network UNC path or mapped drive using a set of stored procedures executed by ColdFusion.

The configuration for this setup will also allow a ColdFusion server to properly propagate user rights across networked servers and domains for using shared access.

If you're new to DTS packages, I'll introduce them later. Using DTS packages helps leverage the power of SQL Server performing many easy tasks without having to do any ColdFusion coding. For example, you can have a DTS package query a bunch of tables and output the results to a Microsoft Access database, an Excel file, or simply place the information in some kind of text-delimited file.

Although this guide focuses on the use of a ColdFusion 5 server and SQL Server 7.0, you can easily apply this information to a ColdFusion MX server and SQL Server 2000.

By James Blaha

This guide is designed for a broad spectrum of users ranging from the ColdFusion novice/enthusiast to the advanced application developer. It is also geared toward helping IT support staff and database administrators who may also play a role in the need to configure this setup, which will allow your ColdFusion server to become a DBMS-integrated powerhouse. My approach to this subject is simple; it will be taken from the top down. What you'll learn along the way:
1. What is DTS?
2. How to configure ColdFusion server services.
3. How permissions are passed between the servers.
4. How to configure SQL Server database permissions and services.
5. How to map a network drive in Windows.
6. How to create a simple DTS package in SQL Server.
7. How to install and create stored procedures in SQL Server.
8. How to test configurations in both SQL Server and ColdFusion.

What Is DTS?

If you're not familiar with the Data Transformation Services (DTS) and why you should use the feature or what it can do for you, a brief explanation follows. For more information, reference the Microsoft Books Online for SQL Server, which installs with SQL Server.

The Data Transformation Services (DTS) feature is included with SQL Server and has an import and export wizard that allows you to easily import, export,

validate, and transform data. DTS can also copy schema and data between relational databases.

A DTS package created by the DTS Import and DTS Export wizards can also be used to import, export, and transform data between a Microsoft SQL Server database and other data sources, including:
- ASCII fixed field–length text files
- ODBC data sources
- SQL Server databases
- Microsoft Excel spreadsheets
- Microsoft Access databases
- Microsoft FoxPro databases
- dBase or Paradox databases
- User-specified OLE DB data sources

The DTS Import and DTS Export wizards allow the user to:
- Copy an entire table, or the results of an SQL query, such as queries involving joins of multiple tables, or even distributed queries.
- Build a query using the Query Builder within the wizard. This allows users inexperienced with the SQL language to build queries interactively.
- Change the name, data type, size, precision, scale, and nullability of a column when copying the source to the destination (where a valid data-type conversion applies).
- Specify transformation rules that govern how data is copied between columns of different data type, size, precision, scale, and nullability.
- Transfer database objects such as users, roles, views, and stored procedures between computers running SQL Server 7.0.

This article will show you how to create DTS packages and call them from within ColdFusion.

How to Configure ColdFusion Application Server

Starting with the basics, the ColdFusion server needs to have the right permissions to access the file(s) produced from the SQL Server output. This requires that your ColdFusion server service run under an account that has permissions to the UNC path or network drive mappings you wish to connect to, and also that it can read and write to that destination. The service is actually named ColdFusion Application Server in CF5 and ColdFusion MX Application Server in CFMX.

Read the Macromedia TechNote, "Running ColdFusion as a Specific User," www.macromedia.com/support/coldfusion/ts/doc uments/tn17279.htm, for information on how to perform the ColdFusion service configuration. I will note that in our Windows 2000 Server environment there was no need to touch the Windows registry as suggested in the TechNote. We gave the local user account Administrator rights to the Windows server so it just propagated through the server.

Place the same local user account on all the servers involved and make sure that the accounts use exactly the same user name and password. Unless you have a domain ID that has access to all your other domains through a trusted domain account ID, using a local user account on the server is your best choice.

Figure 1 is a screen shot of the Windows Services window, where you change the server services logon account information for your server's service(s).
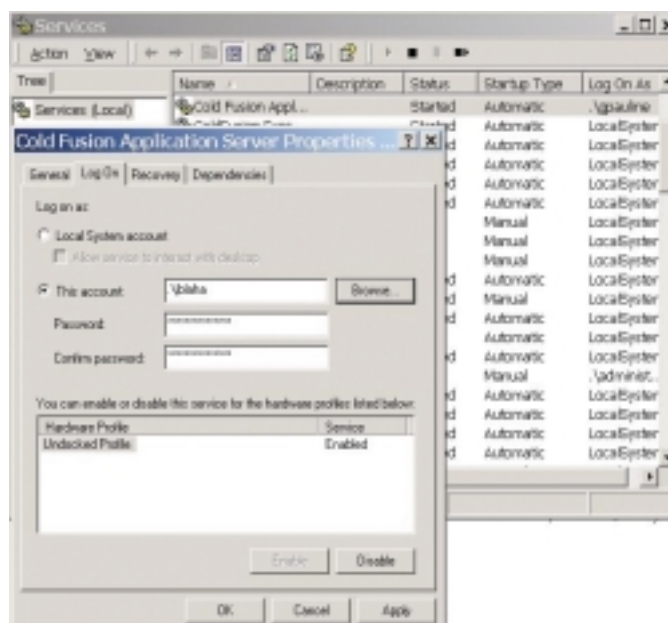

Figure 1

Start by opening your Windows service control panel. You need to edit the service for the "ColdFusion Application Server (or ColdFusion MX Application Server)." Double click on the service and select the tab for "Log On," then click browse, and select the local user account that has rights to the UNC or network drive mapping share locations that your ColdFusion Server needs to access. For example, this would be an account that has rights to the folder that your DTS packages will be outputting to. You may have to add this account to your Windows server if it's not already set up. Click "Apply" then "OK" and restart the service.
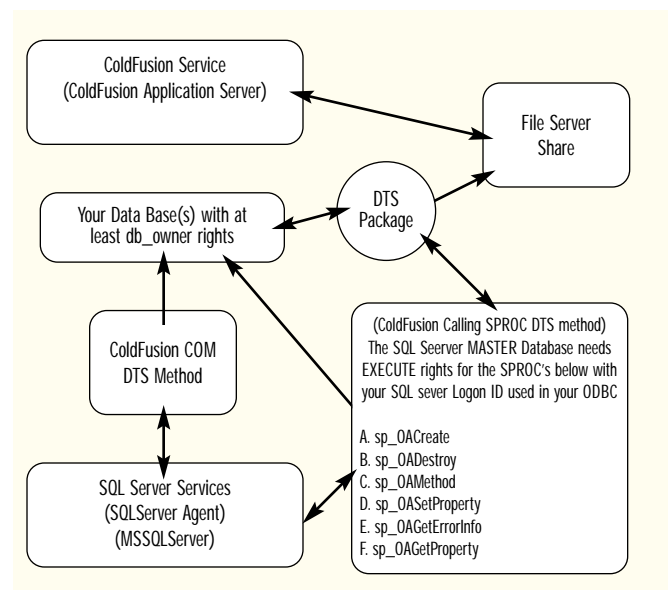

Figure 2

Figure 2 shows a basic flow of how permissions from the user IDs are passed for the processes involved in this configuration. These permissions can be tricky if you don't have a clear under-

standing of user rights and file sharing. The permissions are being passed from the user IDs that are attached to the services for ColdFusion and SQL Server.

When you are executing a DTS package directly from the SQL Server Enterprise Manager it normally uses the rights from your SQL Server Enterprise Manager that you logged in with and the current user account that you're logged in with on the Windows computer or server. This is the case only if you haven't modified your SQL Server services from the original installation. It's also why it may be a good idea to map your shares before you set up your connections or if you're just testing your production SQL Server from a remote computer that has the Enterprise Manager installed. It's not a good idea to use mapped drives in a production environment since they may increase the possibilities of a hacker gaining access to your data.

When ColdFusion tries to execute a CFFILE or CFDIREC-TORY tag you need to have your ColdFusion Server service set up, which specifies the same user account on the ColdFusion service as the UNC path or mapping you wish to access. This is because ColdFusion passes the user ID of the ColdFusion Application Server (or ColdFusion MX Application Server) service to the folder UNC path or drive mapping via the SMB protocol. People with Linux SAMBA server experience can better explain this one. I can only tell you this is how it works! Check out www.samba.org for more information.

When your SQL Server has a DTS package executed through a scheduled job (not a ColdFusion scheduled task) the user rights from the SQLServer Agent are passed to the UNC path. When you execute a DTS package directly on the SQL Server, you are using the actual MSSQLServer service logon ID. Confusing, right?

Use a local server account on the ColdFusion Application Server (ColdFusion MX Application Server) service. It's highly recommended that you use a local server account instead of using a domain account ID for your Windows share(s) and the service for ColdFusion. By using a local account on the server, you can easily access other servers outside the domain of your ColdFusion server. The one exception here may be if you have a domain ID account that has access to all your other domains through a trusted domain account. (Explaining this further is beyond the scope of this article.)

Testing Your ColdFusion Application Server and Share Permissions

To test what you have done so far, use the test code shown in Listing 1 on your ColdFusion server. You'll need to edit the code for your UNC path or drive mappings, and you'll also need some file or set of files handy to test with. Any will do. In the example below, I'm using PDF files.

Warning: Always end your UNC DIRECTORY paths or DRIVE mapping locations with a backslash "\" in CF tags pointing to directories. Otherwise your permissions passed from the ColdFusion server service will pass only to the base folder and not propagate down to subfolders.

Once you have this piece of functionality working, you're ready to move on to the next set of steps.

Configuring SQL Server Database Permissions and Services

Complete this section logged onto the SQL Server as an "SA" account:

1. Using SQL Server "Enterprise Manager" your USER Login account for the local SQL Server has to have proper rights to the database to create a DTS package(s) on your SQL Server. You don't need server SA privileges for this, but you do need to have "db_owner" rights to create a DTS package! Set up a login account for ACCOUNT2 as shown in Figure 3. A login account is how your ColdFusion server connects to a SQL Server through an ODBC connection. This is where your ODBC username and password come from when entered in the CF Admin.
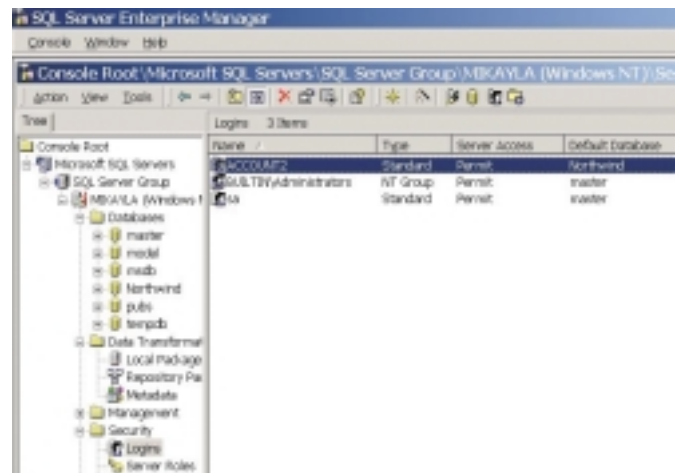

Figure 3

2. On the SQL Server, the login account used for the ColdFusion ODBC account has to have EXECUTE rights on the extended stored procedures listed below, which are found in the SQL Server's master database.

Extended Stored Procedures
A. sp_OACreate
B. sp_OADestroy
C. sp_OAMethod
D. sp_OASetProperty
E. sp_OAGetErrorInfo
F. sp_OAGetProperty

These rights are needed for OLE Automation that is performed in the stored procedures. You can grant "public" and "execute" or just give the login ID "execute" rights specifically.

Note: One alternative to executing a DTS package through a stored procedure would be the use of COM. If you're going to use only COM, these permissions aren't needed for the extended stored procedures. Please note that the testing for this article was performed on a ColdFusion 5 server. ColdFusion MX has been known to have COM issues, so beware.

For more information check out this link on OLE Automation:
www.mssqlcity.com/Articles/General/OleAutSP.htm

HOSTMYSITE.COM

www.hostmysite.com/cfdj

The stored procedures being used (see Figure 4) may already have been granted PUBLIC execute rights from your DBA, otherwise they need to be applied to your login ID.
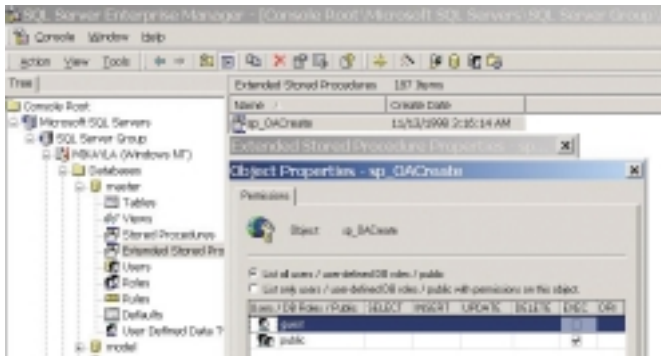

Figure 4

3. *Important note:* When executing a DTS package in SQL Server that will be outputting information to a UNC path or network drive mapping from SQL Server, the following SQL Server services must have the proper permissions to your share(s).

   A. SQLServer Agent: For the purpose of this guide, this service is primarily used when a scheduled SQL Server DTS package is executed and passes its user ID attached to the service.

   B. MSSQLServer: Again, for the purpose of this guide, this is used when the DTS package is executed directly on the SQL Server, through a COM object, or when invoked through the stored procedure method that is using OLE Automation in the stored procedures we'll install later.

How to Map a Network Drive in Windows

You'll need to know how to map a network drive in Windows to a UNC path. If you're not familiar with the procedure, here's a quick guide.

Verify that you can access the share or UNC path from your Windows machine or server. Go to START>RUN and type in the UNC path to your share, e.g., \\MyServer\Folder. If you're logged in to your Windows system as ACCOUNT1 and the share only has rights for ACCOUNT2, you'll need to either have ACCOUNT1 added to the share or provide the password for ACCOUNT2. If you're passing a user ID other than the one you've used on your Windows logon, you'll need to map a network drive to the share. Please understand this is just for your ease of use and testing. Having a mapped drive can be a security risk, but it can also help provide a quick link to your data when testing.

Right click on "My Computer" and select "Map Network Drive…" (see Figure 5).

Once you enter your UNC path and select a drive letter, click on "different user name." You'll be prompted for the account user name you wish to pass. If you're using a domain ID the user name will be something to the effect of "MyDomainName\MyUserID" (see Figure 6).

That's it! Now you can access your share as easily as if it were a hard drive partition.

Figure 5

Figure 6

How to Create a Simple DTS Package in SQL Server

Complete this section logged on to SQL Server as the same account you've listed in the ColdFusion Admin datasource definition for the ODBC login account:

1. Open your SQL Server Enterprise Manager, and right-click in the table area of the sample "Northwind" database to generate a DTS package. Northwind is a default database that installs with SQL Server for testing. Select "All Tasks" and choose the "Export Data.." wizard (see Figure 7). Click "Next" when the popup window appears .
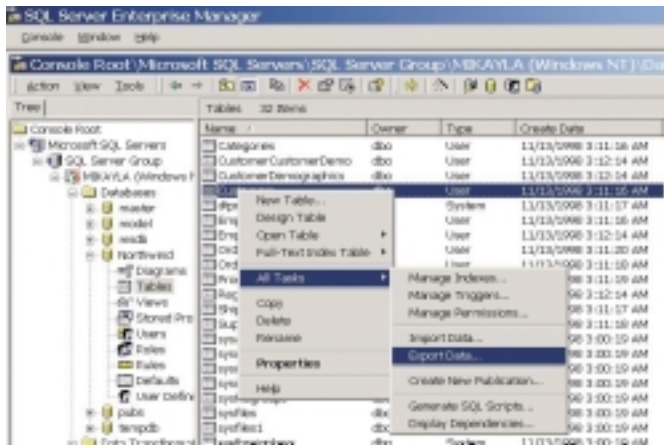
Figure 7

2. The option for "Use SQL Server authentication" should already be selected (see Figure 8).
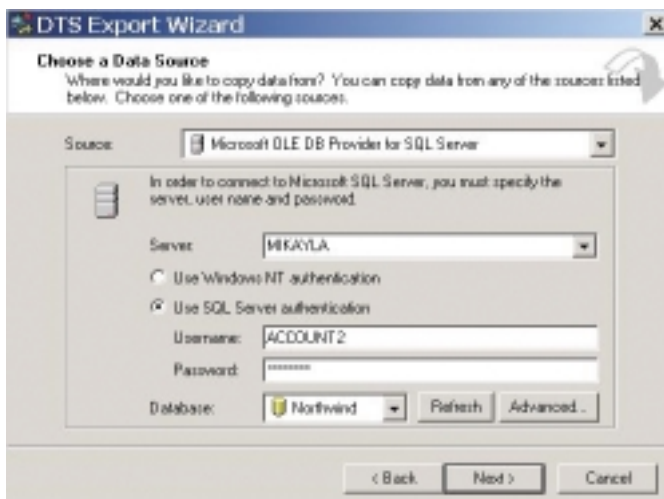

Figure 8

Note: This user ID needs to be the same user name and password configured in your ColdFusion data-source definition for your ODBC connection to the SQL Server; it *does not* have to be the same as the account used to run the ColdFusion server service.

3. Select your file output destination preference and specify your UNC path for the output. As you can see in Figure 9, the server name is "SERVER." This is the same as \\MyServer in the examples above for creating a mapped drive to the share on your server. (You could select the mapped drive that was created in the previous step, but this is the preferred way to go. You really don't want to use mapped drives for security reasons.)

Note: If you're going to use a UNC path and the user name is different than the logged in server ID, you need to have mapped a network drive on Windows before you can properly reference the UNC path. Welcome to Windows permissions. (Don't fill in the username and password values, see Figure 9).
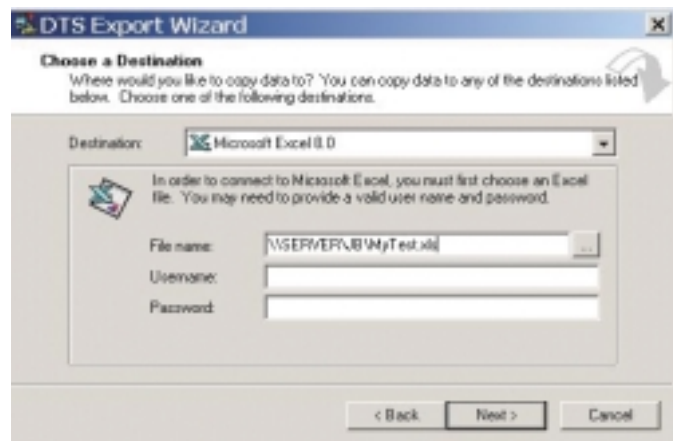

Figure 9

4. Press "Next" and follow the prompts. Choose what data you want to extract from the database. In this example I'm choosing to copy one table (see Figure 10).
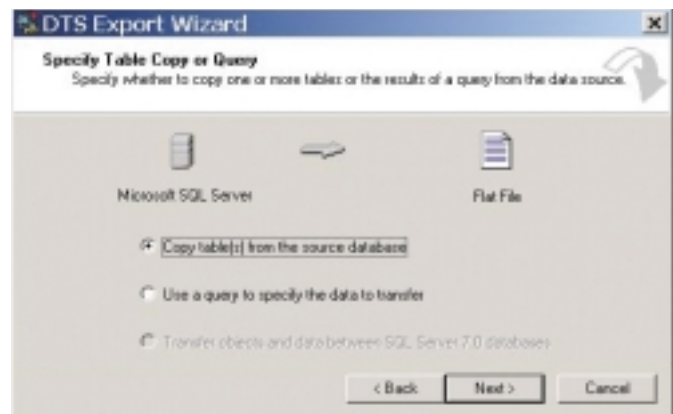

Figure 10

5. As shown in Figure 11, I've selected the table "Customers" and I'm generating an Excel (XLS) file. The first row in the file will contain the table's column names by default.
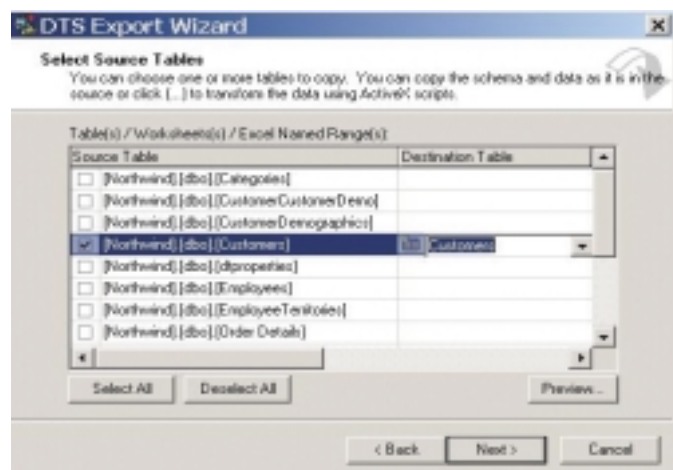

Figure 11

6. On the next screen, make sure you have selected "Save DTS Package" and that the radio button for "SQL Server" is selected. This means that the DTS package will be saved inside the SQL Server (see Figure 12).
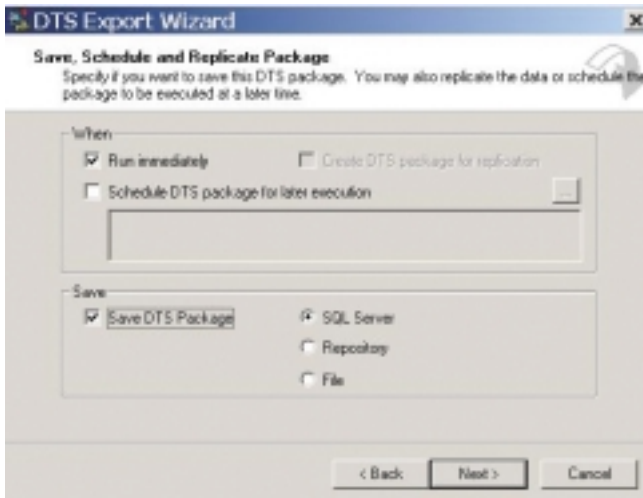

Figure 12

7. Name the DTS package. This is the name your ColdFusion code will later reference. Notice the option for "Use SQL Server authentication (see Figure 13)." The specified account should be the same account ColdFusion uses for its ODBC connection to your database.

Note: Use of good naming conventions is a good habit to form. It makes your code much easier to read when you reference packages that start with DTS_xxxx.
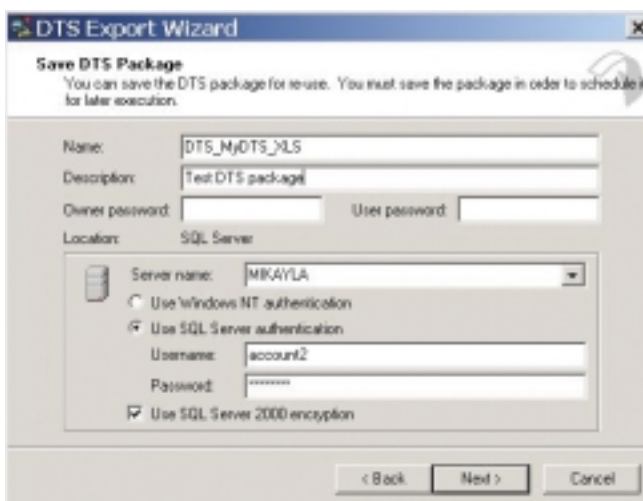

Figure 13

8. Your DTS package will run and output your file to the destination path. Go to the destination, confirm that an XLS file was created in the directory indicated containing the data from the table that was selected. If so, delete the created file (see Figure 14).
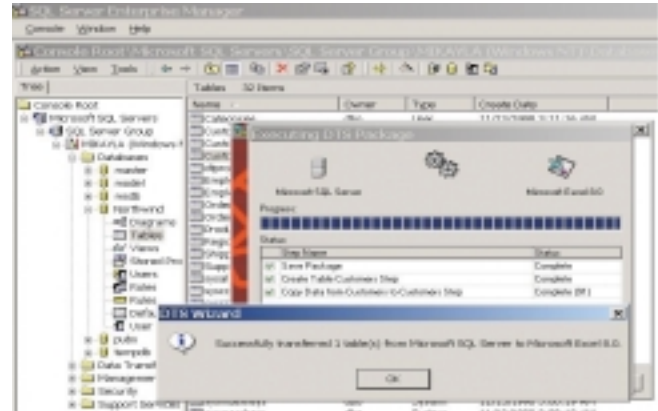

Figure 14

9. One last test, in the Enterprise Manager. Execute the DTS package manually. Go to the "Data Transformation Services" area, select Local Package, and in the right window pane, right click on the DTS package you just saved. Click "Execute Package" (see Figure 15). If this works, great, on to the next step. If it doesn't, you have some troubleshooting to do. Go back and review your previous steps.

Figure 15

To Be Continued…

Due to the length and detail of this article, Part 2 will be presented in next month's issue. It will address the following key areas:
- How to create a stored procedure in SQL Server
- Installing stored procedures
- How to test SQL Server configurations
- ColdFusion code for executing a DTS Package through OLE Automation via a stored procedure and COM object
- Troubleshooting setup and configuration

About the Author
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```
Listing 1: Test code using CFDIRECTORY and CFFILE

<!--- _____Part 1_____ --->


<h2>List PDF Contents of \\YourRemoteServer\ShareName\</h2>

<CFDIRECTORY ACTION="LIST"
           DIRECTORY="\\YourRemoteServer\ShareName\"
               NAME="List1"
           FILTER="*.pdf"
           SORT="datelastmodified ASC">

<! --- _____Look At Data In The Directory_____ --->

<!--- Output the files found in the directory --->

<cfoutput>The number of PDF files found in the directory are:
<strong>#List1.recordCount#</strong></cfoutput>

<br>

 <CFOUTPUT QUERY=List1> <br>
   <table border="1" width="40%">
     <tr bordercolor="##333333" bgcolor="##FFFFFF">
       <td width="127"><b>Name:</b></td>
       <td width="172"><i>#name# </i></td>
     </tr>
       <tr bordercolor="##333333" bgcolor="##FFFFFF">
         <td width="127"><b>Size:</b></td>
         <td width="172"><i>#size# </i></td>
       </tr>
       <tr bordercolor="##333333" bgcolor="##FFFFFF">
         <td width="127"><b>Type:</b></td>
         <td width="172"><i>#type# </i></td>
       </tr>
       <tr bordercolor="##333333" bgcolor="##FFFFFF">
         <td width="127"><b>Date last modified:</b></td>
         <td width="172"><i>#datelastmodified# </i></td>
       </tr>
       <tr bordercolor="##333333" bgcolor="##FFFFFF">
         <td width="127"><b>Attributes:</b></td>
         <td width="172"><i>#attributes# </i></td>
       </tr>
       <tr bordercolor="##333333" bgcolor="##FFFFFF">
         <td width="127"><b>Mode:</b></td>
         <td width="172"><i>#mode# </i></td>
       </tr>
   </table>
 </CFOUTPUT>

<hr>

 <BR><BR><BR>

<!--- _____Part 2_____ --->

<h2>Copy the PDF file from Your CF Server to
\\YourRemoteServer\ShareName\</h2>

<cffile action = "copy"
     source = "C:\Inetpub\wwwroot\SomePDFFile.PDF"
        destination = "\\YourRemoteServer\ShareName\">

<CFDIRECTORY ACTION="LIST"
           DIRECTORY="\\YourRemoteServer\ShareName\"
               NAME="List2"
           FILTER="*.pdf"
           SORT="datelastmodified ASC">

<!--- _____Look At Data In the remote Directory_____ --->

 <!--- Output the files found in the remote directory --->
```

```
<cfoutput>The number of files found in the directory are:
<strong>#List2.recordCount#</strong></cfoutput><br>

<CFOUTPUT QUERY=List2> <br>
  <table border="1" width="40%">
    <tr bordercolor="##333333" bgcolor="##FFFFFF">
      <td width="127"><b>Name:</b></td>
      <td width="172"><i>#name# </i></td>
    </tr>
      <tr bordercolor="##333333" bgcolor="##FFFFFF">
        <td width="127"><b>Size:</b></td>
        <td width="172"><i>#size# </i></td>
      </tr>
      <tr bordercolor="##333333" bgcolor="##FFFFFF">
        <td width="127"><b>Type:</b></td>
        <td width="172"><i>#type# </i></td>
      </tr>
      <tr bordercolor="##333333" bgcolor="##FFFFFF">
        <td width="127"><b>Date last modified:</b></td>
        <td width="172"><i>#datelastmodified# </i></td>
      </tr>
      <tr bordercolor="##333333" bgcolor="##FFFFFF">
        <td width="127"><b>Attributes:</b></td>
        <td width="172"><i>#attributes# </i></td>
      </tr>
      <tr bordercolor="##333333" bgcolor="##FFFFFF">
        <td width="127"><b>Mode:</b></td>
        <td width="172"><i>#mode# </i></td>
      </tr>
  </table>
</CFOUTPUT>

<hr>

<BR><BR><BR>
```

Setting Up Your Development Server

with ColdFusion 5, MX, and BlueDragon

Browse code in your webroot and serve it via all three app servers just by changing the virtual directory in your URL

The world of ColdFusion application servers is quite interesting at the moment. Macromedia's recent update to CFMX 6.1 promises to add a lot of stability and speed to the product. BlueDragon, New Atlanta's alternate CFML runtime engine continues to gain momentum. Yet despite these two great products, much of the development out there is still based on ColdFusion 5 (or earlier).

What if you're interested in running one or more of these at once? Perhaps you're going to upgrade an app from one server to another? How do you test your current applications for compatibility among the other servers without reconfiguring your development machine? If you're a consultant, or work for a consulting firm, there's a good chance you'll have multiple clients, each with different server requirements. How do you handle the changing requirements without reconfiguring your server every time?

The good news is that you can install all three products at once to test them, but they each support slightly different versions of CFML. How do you set things up so that you can test a set of CFML templates against each server, while keeping the CFML code in one place?

By Jeffry Houser

By Charlie Arehart

This article answers those questions by showing you how to run all the application servers off of a single instance of Microsoft IIS 5 on Windows 2000, and will make it easy to test for cross-compatibility in your code. Normally, if you set up a ColdFusion (or BlueDragon) server to use IIS, it will replace any prior IIS settings for running CFML templates. We'll show you how to resolve that.

Even if you use Apache, iPlanet, IIS on a Windows Server edition, or some other external Web server, the concepts here will generally apply (though they may be even more flexible). If you already have CF5, CFMX, or BlueDragon installed, just follow along to learn a couple of interesting points to enable setup of IIS to run all three servers at once, pointing to the same directory of CFML code. It's a great way to do testing against all three servers.

Installing/Configuring ColdFusion 5

The first step is to install and configure ColdFusion 5 on your machine. If you already have it installed and configured to use IIS, you can skip to the next paragraph. ColdFusion 5 can currently be downloaded from the Macromedia Web site, at http://download.macromedia.com/pub/coldfu sion/esd/coldfusion-50-win-us_devrel.exe. It can also be found on your ColdFusion Studio 5 CD or included in Ben Forta's *CF5 Web Application Construction Kit* book and others. Install it to the default directory, C:\Cfusion. During the install process you should let the installer set itself up for IIS.

You can test the success of your installation by running the ColdFusion Administrator (such as http://localhost/cfide/administrator/index.cfm) or by creating and running a page using the code below:

```
<cfoutput>
 Level:  #Server.ColdFusion.ProductLevel#<br>
 Name #Server.ColdFusion.ProductName#<br>
 Version #Server.ColdFusion.ProductVersion#<br>
</cfoutput>
```

Save the page in your IIS webroot (\inetpub\wwwroot\), perhaps as cfversion.cfm, and load the page in your browser with http://localhost/cfversion.cfm. You'll see that the product version is 5,0,0,0, the name is ColdFusion Server, and the level is either Professional or Enterprise.

The install process will create two mappings in IIS, one for cfm pages and one for dbm pages. To see these, open up your Internet Services Manager (found at Start-->Settings-->Control Panel-->Administrative Tools), right-click on the Default Web Site, and choose Properties. Click on Home Directory and Configuration. (If the Configuration button is not selectable, close that window and right-click on the computer name above the Default Web Site, choose Properties, choose Edit for the Master Properties of the WWW Service, then choose Home Directory and Configuration.) You should see a cfm extension mapping listed on the app mappings tab, like that shown in Figure 1.
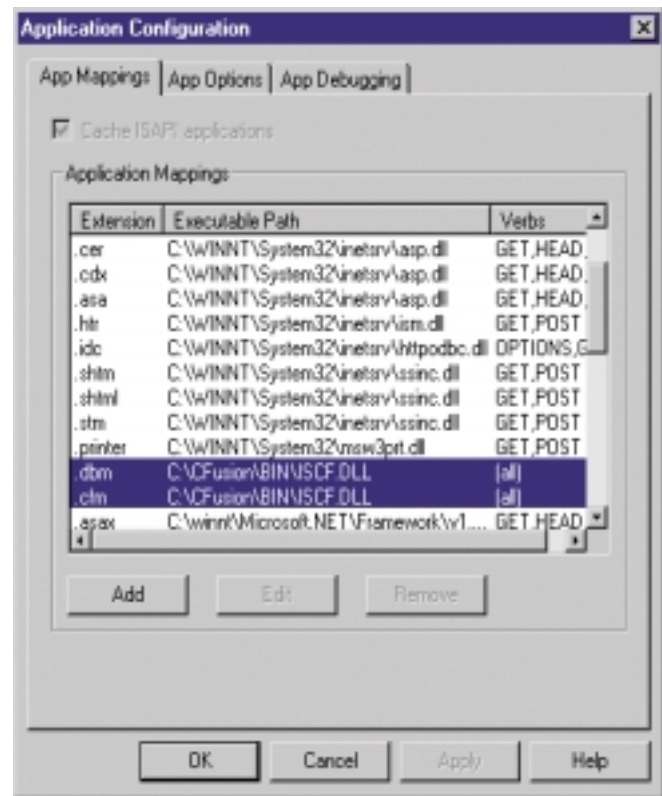

Figure 1

The mapping should point to "C:\Cfusion\BIN\ISCF.DLL". That's the name of CF5's IIS adapter. We're next going to install CFMX and eventually cause it to overwrite this IIS configuration for CF 5, so you should write down the mapping information as you'll need it later.

You'll also want to make backup copies of the ColdFusion 5 Administrator (cfide) and documentation (cfdocs) directories that were installed by default in the IIS webroot (\inetpub\wwwroot), as they will also be overwritten in a later step. A simple way to do this is by renaming them to cfide5 and cfdocs5. We'll show you how to make them accessible again later.

Installing/Configuring ColdFusion MX

Our next step will be to install/configure ColdFusion MX. If you already have it installed and configured to use its built-in Web server, you can skip the next two paragraphs. If you are already configured to use IIS, skip to the next subsection, "you are checking the IIS Configuration for CFMX".

You can download the latest version of ColdFusion MX from the Macromedia Web site, at www.macromedia.com/software/coldfusion/trial. ColdFusion MX will install into the CFusionMX directory by default. Just be sure not to install into the same directory as your ColdFusion 5 installation.

In fact, the installer will detect that ColdFusion 5 is already installed. Tell it you want it to coexist and install ColdFusion MX using its built-in Web server. You could tell it during the install to implement its IIS connection, but we want the article to help those who may have already installed CFMX with its built-in Web server, who will want to follow the next steps.

Once the installation is done, you can confirm that the installation was successful by running the CFMX Administrator. By default, CFMX will set up its built-in Web server at port 8500, so the URL would be http://localhost:8500/cfide/administrator/index.cfm.

Next, or if you had previously installed CFMX using its built-in Web server, we will want to manually set up CFMX to work via IIS. Using Windows Explorer or My Computer, look in the C:\CfusionMX\runtime\lib directory and double click on wsconfig.jar. (In CFMX 6.1, there is also a new menu option, Start-->Programs-->Macromedia-->Macromedia ColdFusion MX-->Web Server Configuration Tool.) The screen shown in Figure 2 will come up.
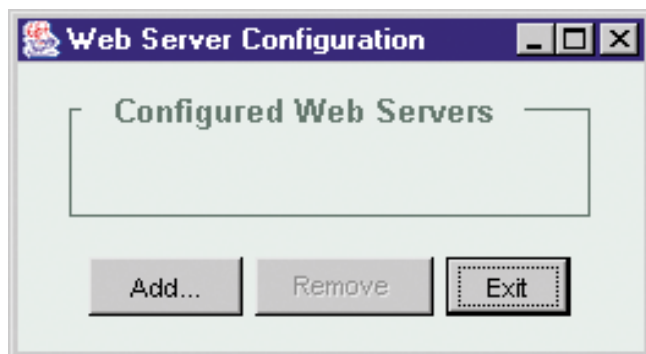

Figure 2

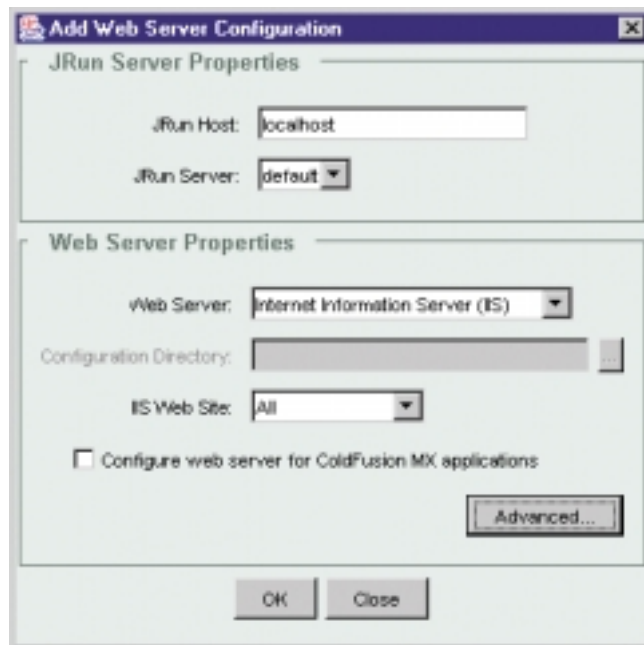Click the add button and you'll see the screen shown in Figure 3.

Figure 3

If you find that you can't launch the JAR file (such as if it tries to open it like a ZIP file), or if it doesn't work for any other reason, look at the CFMX documentation, Installing ColdFusion MX and its section, "Configuring Web Servers" in Chapter 2.

Assuming things are working for you as shown in the figures, select your IIS Web site, click the Configure Web Server for ColdFusion MX Applications button and then click OK. You will be asked to restart the Web server.

Checking the IIS Configuration for CFMX

The ColdFusion MX mappings are now created on IIS. As was described in the CF5 step, open up your Internet Services Manager and bring up properties on the Default Web Site (or the Master Properties, if necessary). Click on Home Directory and Configuration. You should see a bunch of mappings, including cfm and cfc, listed on the app mappings tab, similar to the one shown in Figure 4.

You'll also see jsp, jws, and cfml mappings listed. The mappings probably point to "C:\CFusionMX\runtime\lib\wsconfig\1\jrun.dll". Write down this value to use in a later step. Take note, as well, that CFMX's installation of the IIS adapter actually builds the file named in that mapping. It's not enough to skip this step and just use the aforementioned DLL name in the later step.

You can run the CF Admin or our test code from above to verify that IIS is now sending pages to ColdFusion MX. In either case, you'd no longer want to use the port 8500 on the URL to test against CFMX. Instead, use the same URL you used above to test CF5. The Product Name is still ColdFusion Server, the Product Level should still be Enterprise or
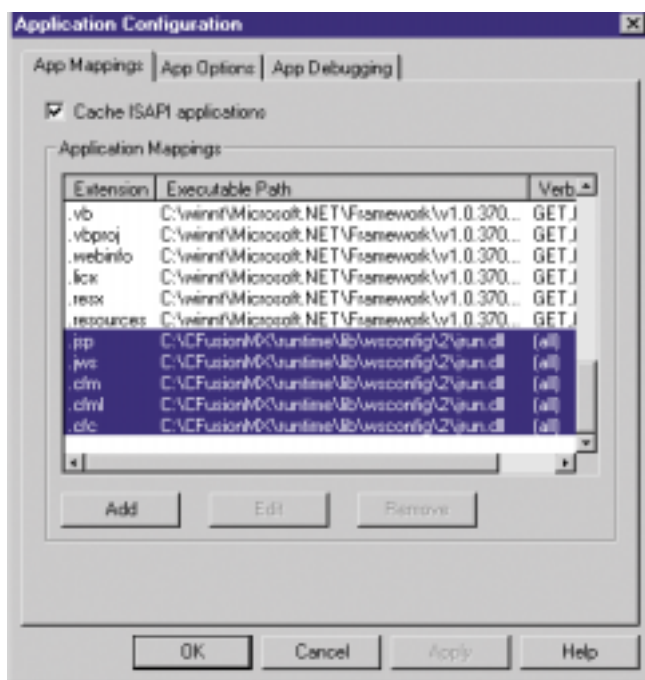
Figure 4

Professional (or may now be Standard, in CFMX 6.1). The version should start with "6" and be something like 6,1,0,63239. Again, installing ColdFusion MX has removed your ColdFusion 5 mappings from IIS, but don't worry about that for now. We'll show you shortly how to reactivate ColdFusion 5 via IIS.

Note that the earlier installation of CFMX (using the built-in Web server) installed the CFMX documentation and Administrator in the "C:\CFusionMX\wwwroot". If you want to be able to easily access these by way of IIS, you will need to copy the ColdFusion MX Administrator (cfide) and documentation (cfdocs) directories into the IIS Web root "C:\inetput\wwwroot". This is why we had you rename those directories when they had been installed with CF5.

Installing/Configuring BlueDragon

Finally, we want to install BlueDragon Server. Even if you don't know about it, there's no harm in installing it. It can run alongside both CF5 and CFMX. In simplest terms it's just another server for running your CFML, as you will see. You can learn more about it, including other benefits and features, at www.newatlanta.com/bluedragon/.

Installing BlueDragon Server is easy. It's downloadable from the New Atlanta Web site. Get the Server JX version, which like CF is available as a 30-day, full-featured trial that reverts to a single-IP developer edition after that. There is also a Server version, which is free for both development and deployment, without a time limit (though not free for redistribution). It lacks a few features available in the BlueDragon Server JX (and BlueDragon/J2EE) edition, but is much more full-featured than was the previous free edition of ColdFusion from Allaire in the 4.5 timeframe, called CF Express.

While you can install BlueDragon into its default directory (C:\Program Files\New Atlanta\BlueDragon_Server), for the purposes of this article it may be preferable to install it instead to a C:\Bdragon directory, for reasons explained later. And again, let's install BlueDragon using its built-in Web server, just as you did for ColdFusion MX. If you already installed it in its default directory, don't worry. We'll explain this issue later.

It's worth noting that like CF, you could instead have installed BlueDragon to integrate with IIS (or other Web servers like Apache and IPlanet). You could also easily add IIS integration after installing it using the BlueDragon Administrator. For the purposes of this article, we'll instead be manually setting up IIS to connect to BlueDragon. Indeed, we'll create a special virtual directory for each server in the next section.

You can confirm that BlueDragon is working by running its Administrator. It's accessible only by using the BlueDragon built-in Web server, which by default would be available at http://localhost:8080/bluedragon/admin.cfm. (Unlike CF, for security reasons the BlueDragon Administrator is accessible only from the localhost, from the machine on which it was installed. Therefore, even if you had installed it with IIS, or later configured it to use IIS, there's no point in trying to copy the admin to the IIS webroot as we did with CFMX.)

You are now ready to start configuring IIS.

Configure IIS

Let's take stock of what you've done to your machine thus far. ColdFusion 5, ColdFusion MX, and BlueDragon are installed. Only ColdFusion MX is set up to run using IIS. All CFML templates in all directories run though IIS will execute by way of CFMX. BlueDragon will run only in stand-alone mode using its built-in Web server. ColdFusion 5 won't work at all because its mappings were replaced by ColdFusion MX. We now want to accomplish our goal of having everything run off of our single instance of IIS, pointing to the inetpub/webroot.

The solution is to create virtual directories for each server that point to the webroot, but run the templates through the desired CFML server. The key is in those extension mappings that we referred to before. In fact, we can create different virtual directories that each use a different mapping for CFML templates. You can do this from the Internet Services Manager. Follow these instructions:

1. Right-click on the Default Web Site and select Virtual Directory from the New menu.
2. Name the first virtual directory something like CF5. When asked to enter the path containing the Web content, use the available Browse button to point to inetpub\wwwroot. Now the virtual directory is created.
3. Bring up that new virtual directory's properties by right-clicking it and selecting Properties. Click on the Configuration button on the virtual directory tab. It will probably have inherited mappings (for the .cfm and .cfml extensions) that point to the ColdFusion MX IIS DLL, because CFMX was configured to use IIS integration in that previous CFMX install step. We will want to override this mapping. Change the cfm and cfml mappings to point to C:\Cfusion\BIN\ISCF.DLL, the value you wrote down earlier in this article during the CF5 setup.
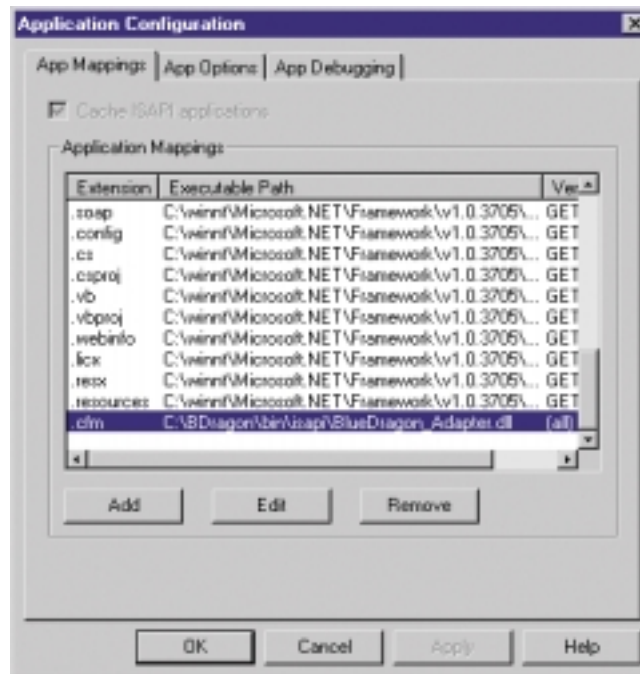

Figure 5

4. Now, templates executed with the new /CF5 URL will execute via CF5 instead. You can confirm that your new setup is working by using the URL http://localhost/CF5/ to run some CFML templates in the inetpub\wwwroot. If you followed the recommendation of renaming the CFDOCS directory that had been installed with CF5, the URL would now be http://localhost/cf5/cfdocs5/dochome.htm. The CF5 Administrator would be http://localhost/cf5/cfide5/administrator/index.cfm. Admittedly, not all the images will work correctly and some links may not work as expected, but at least it's better than having lost the CF 5 Admin and docs if we'd installed CFMX directly to the IIS webroot and had overwritten them entirely.

Now, what about CFMX? Though it's already set up to serve docs in the webroot, you may want to create another virtual directory, named CFMX, to parallel what you did for CF5. You can follow steps similar to those above to create a virtual directory named CFMX, using the CFMX version of the IIS DLL mappings we had taken note of earlier.

The final step is to create a BD virtual directory. Again, use the same steps above, but in this case the DLL file we want to point the cfm mappings to is located in that BDragon directory we installed it to, at C:\BDragon\bin\isapi\BlueDragon_Adapter.dll, as shown in Figure 5.

Now we can explain why we chose to install BlueDragon to a BDragon directory rather than Program Files\New Atlanta. It's due to a limitation in the IIS Internet Services Manager dialogue we've been using for associating a DLL to an extension mapping. The problem is that it will not accept a directory path containing spaces.

This wouldn't be an issue if we were to choose IIS integration at installation of BlueDragon, or if we selected it afterward using

the BlueDragon Administrator. In those cases, BlueDragon uses a programmatic API to set the extension mapping and the path to its DLL, where the spaces don't matter.

If you've already installed BlueDragon and want to try this manual approach to setting up a new virtual directory, and you don't want to reinstall BlueDragon, you can still point to your existing directory here. You'll just have to convert the path to the Windows 8.3 format. On our test machine, that path name would be C:\Progra~1\NewAtl~1\BlueDr~1\bin\isapi\BlueDragon_Adapter.dll. This will vary on your machine depending on other directories you may have in the Program Files or New Atlanta directories. If you're comfortable using the DOS command line, you can determine the 8.3 name for a given path using the DIR command's /X switch.

Finally, note that unlike CFMX, we did not need to install the IIS adapter in order to use that BlueDragon_Adapter.dll. As in CF5, it's simply placed there automatically during the install process along with all the other external Web server adapters.

Conclusion

Now you can browse code in your webroot and serve it via all three application servers just by changing the virtual directory in your URL.
- Localhost/cf5 will send code to the ColdFusion 5 server.
- localhost/cfmx will send code to the ColdFusion MX server.
- localhost/bd will send code to the BlueDragon server.

And notice that while we've created the virtual directories to point to the IIS webroot, you could just as easily create three sets of virtual directories to point to another content directory outside the webroot.

Maybe someone out there would like to take this concept and extend it to offer similar instructions for doing this in Apache, iPlanet, or IIS 6 on Windows Server 2003. Again, the concepts are similar, and sometimes even easier on those Web servers.

In any case, for those on IIS, jumping between projects, clients, and application servers just became much easier.

About the Authors

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Sorting Multidimensional Arrays

No longer a problem

One of the most common requests made by users when they see data displayed on a Web page is that they want to be able to view the information sorted by columns. Working with a database makes this request fairly simple; working with arrays is, or at least was, a problem.

Why use an array? No ColdFusion programmer would volunteer to do such a crazy thing. In a recent project, where our team was pulling loan information resultsets from a mainframe repository, I did just that. The loan information was being stored in a data structure that contained multidimensional arrays created with WDDX calls to the mainframe. We always want to keep the users happy, so the Internet was searched, several routines for sorting multidimensional arrays were found and tested, and the users were promised that they would be able to dynamically display the results in different sorted orders by clicking on the column headers. Everyone was happy and the team was ready to code.

We Forgot to Account for Murphy's Law

Let's take a look at how it was to be done…
The first step is to build a small multidimensional array. The example code below shows daily sales for a fruit stand:

```
<cfset Session.masDailySales = arraynew(2)>
<cfset Session.masDailySales[1][1]  = "Apples">
<cfset Session.masDailySales[1][2]  = "1">
<cfset Session.masDailySales[1][3]  = "9.95">
<cfset Session.masDailySales[1][4]  = "Michael">
<cfset Session.masDailySales[1][5]  = "Cash">

<cfset Session.masDailySales[2][1]  = "Oranges">
<cfset Session.masDailySales[2][2]  = "1">
<cfset Session.masDailySales[2][3]  = "6.95">
<cfset Session.masDailySales[2][4]  = "Joanne">
<cfset Session.masDailySales[2][5]  = "Check">

<cfset Session.masDailySales[3][1]  = "Peaches">
<cfset Session.masDailySales[3][2]  = "4">
<cfset Session.masDailySales[3][3]  = "8.95">
<cfset Session.masDailySales[3][4]  = "Michael">
<cfset Session.masDailySales[3][5]  = "Credit">
```

In the examples found on sorting arrays, they suggested creating a second array (single dimension), populating that array with the column of information to be sorted, sorting that array using arraysort(), and then creating a new multidimensional array by comparing the information in the single-dimension array to the information in the original multidimensional array. In theory this will work. The problem with this approach is that if you have multiple rows with the same information, your resulting sorted array has incorrect information.

For example, you want to sort on the quantity purchased. Using the sorting method commonly suggested, you end up with the following array:

```
masDailySales[1][1]  = "Apples"
masDailySales[1][2]  = "1";
masDailySales[1][3]  = "9.95"
masDailySales[1][4]  = "Michael"
masDailySales[1][5]  = "Cash"

masDailySales[2][1]  = "Apples"
masDailySales[2][2]  = "1";
masDailySales[2][3]  = "9.95"
masDailySales[2][4]  = "Michael"
masDailySales[2][5]  = "Cash"

masDailySales[3][1]  = "Peaches"
masDailySales[3][2]  = "4"
masDailySales[3][3]  = "8.95"
masDailySales[3][4]  = "Michael"
masDailySales[3][5]  = "Credit"
```

The information on the oranges was replaced with the information about the apples because the sorted fields both had the number 1 in them. The match/replace routines always found the first element to match, not the correct element. The users were not going to be very happy with this.

Now, let's take a look at how it was changed…

When creating the initial array, a row is added to each element that will have no value:

```
<cfset Session.masDailySales[1][6]  = "">
<cfset Session.masDailySales[2][6]  = "">
<cfset Session.masDailySales[3][6]  = "">
```

The new row will be used as the sorting row. Each time the page is called, the new row is populated with the information from the column you want to sort on. To ensure that the information is always unique, the index key for the looping routine used to create the single-dimension array will be concatenated to the information stored in the new row:

```
<cfloop from="1" to="#arrayLen(Session.masDailySales)#"
```

By Richard Gorremans

```
index="i">
  <cfswitch expression="#sort_column#">
    <cfcase value="1">
      <cfset Session.masDailySales[i][6] =
        "#Session.masDailySales[i][1]# - #i#">
    </cfcase>
    <cfcase value="2">
      <cfset Session.masDailySales[i][6] =
        "#Session.masDailySales[i][2]# - #i#">
    </cfcase>
    <cfcase value="3">
      <cfset Session.masDailySales[i][6] =
        "#Session.masDailySales[i][3]# - #i#">
    </cfcase>
    <cfcase value="4">
      <cfset Session.masDailySales[i][6] =
        "#Session.masDailySales[i][4]# - #i#">
    </cfcase>
    <cfcase value="5">
      <cfset Session.masDailySales[i][6] =
        "#Session.masDailySales[i][5]# - #i#">
    </cfcase>
  </cfswitch>
</cfloop>
```

Indicating the Sort Column and Order

Before I get too far ahead of myself, it will be best to back up a bit and explain how the sort_column is set.

Each of the column titles is displayed to the user as a hyperlink. The hyperlinks will each call the page again, and will pass the column number as sort_column. The code below shows how it will default to one (1). Each time the page is called it looks for this information and sets the sort_column URL parameter.

As an example, the title for the Quantity would be coded as:

```
<a href="MultArraySort.cfm?sort_order=#sort_order#&sort_column=2">Quantity
</a>
```

When the page is reloaded the following code will set the column number that is to be sorted.

```
<cfif IsDefined("url.sort_column") AND url.sort_column GT 0 and
  url.sort_column LT 5>
  <cfset sort_column = url.sort_column>
<cfelse>
  <cfset sort_column = 1>
</cfif>
```

To facilitate the switching between Ascending and Descending order, another URL parameter is passed. This parameter will switch the sort_order variable between Asc and Desc, using Asc as the default direction.

```
<cfif IsDefined("url.sort_order")>
  <cfif sort_order EQ "Asc">
    <cfset sort_order = "Desc">
  <cfelse>
    <cfset sort_order = "Asc">
  </cfif>
<cfelse>
  <cfset sort_order = "Asc">
</cfif>
```

Back to the Sort Processing

We now have a column of unique information that can be used as a reference key between the original array and the sorted array. Using the new row, a temporary single-dimension array, tempmasarray, is created and sorted in the specified order (Asc or Desc).

```
<cfset tempmasarray = arraynew(1)>
<cfloop from="1" to="#arraylen(session.masDailySales)#" index="i">
  <cfset tempmasarray[i] = session.masDailySales[i][6]>
</cfloop>
<cfset arraysort(tempmasarray, "textnocase", sort_order)>
```

The last step is to create a new multidimensional array using the tempmasarray as the key. Two looping routines are used to perform this function. The first loop steps through the tempmasarray. The second loop takes the values from the tempmasarray and searches for a match in the original array. When a match is found, the information from that element is appended to the new array. When the looping is completed, the sortedsalesarray is an exact duplicate of the original array, sorted in the desired order.

```
<cfset sortedsalesarray = arraynew(2)>

<cfloop from="1" to="#arraylen(tempmasarray)#" index="i">
  <cfloop from="1" to="#arraylen(session.masDailySales)#" index="i2">
    <cfif tempmasarray[i] eq session.masDailySales[i2][6]>
    <cfset sortedsalesarray[i] = session.masDailySales[i2]>
      <cfbreak>
    </cfif>
  </cfloop>
</cfloop>
```

Of course, still another solution to this problem would be to store the data not in arrays to be sorted, but instead, in a query resultset (using the functions QueryNew and QuerySetCell and CF's query of queries functionality). Whether that approach will perform better will depend on the data and your processing, but it may be worth investigating. This additional solution will be the topic of my next article.

Summary

The functionality described in this article is not something a ColdFusion programmer will deal with on a regular basis, and is not recommended if you have the ability to make calls to a database and receive a resultset that's sorted. It's always recommended that you leave data processing to a database engine whenever possible. But consider if your information is stored on another server and you're using WDDX routines or perhaps Web services to retrieve resultsets and you want to sort that data; then this routine will be very helpful in reducing the number of calls to those servers by sorting the data on the local ColdFusion server.

About the Author

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# How to Find the Right Hosting Service

CFDJ interviews Vlad A. Friedman, CEO of Edgewebhosting.net

ColdFusion developers are faced with lots of choices when trying to find a ColdFusion hosting service that meets their needs. It can be tough locating a host that offers the right combination of features, service, and support at a price that's right for a variety of developers. In the March 2003 issue (*CFDJ*, Vol. 5, issue 3), we conducted our first interview with a ColdFusion hosting provider. This month, we interview Edgewebhosting.net CEO Vlad A. Friedman for the skinny on his company's ColdFusion hosting services.

CFDJ: **Tell us a little bit about your company. How did you get started in the hosting business?**
Friedman*:* Edgewebhosting.net was started almost 5 years ago as a division of ACS&S, Inc., a 12-year-old systems integration and consulting firm. As our consulting arm grew into development of Web technologies, we started utilizing the services of several hosting companies for our clients. After a relatively short time, we realized there was a great divide in the marketplace between the service providers and ColdFusion developers (their customers).

Few if any of these companies offered what we would have considered quality hosting and support services, and most treated their customers quite poorly. At that point we began to offer hosting services with service-level agreements and a quality of service and support that we felt customers deserved. ACS&S was retitled and Edgewebhosting.net was born. Our growth was paced and managed effectively to completely remove any dependencies on outside funding. This has allowed us to maintain high quality of service even through tumultuous financial markets, as most of our competitors continue to lose staff and resources. After 5 years, we have grown and built a state-of-the-art
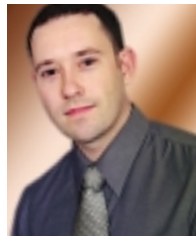
Interviewed by
Rob Brooks-Bilson

data center facility that hosts tens of thousands of Web sites, and allows us to effectively handle our exceptional growth rate, which has exceeded 80% per year.

CFDJ: **Why ColdFusion hosting?**
Friedman*:* We chose ColdFusion for several reasons. First, we already had a staff of developers that were familiar with the product. Second, ASP was not yet a mature development environment. Last, we felt that we could provide better service than any other provider in the marketplace since we already had the in-house talent to provide support services. Originally, our goal was to bring in more consulting business via the relationships we built with the clients. Over time we learned that our original premise was flawed. There were so many developers upset with the service they received from their hosting providers that they swarmed into our data center. Now, hosting has become the primary service that we offer, accounting for over 85% of the company's revenue. Developers now encompass over 90% of our clientele, and consulting has become just a convenience service that we offer to a few select long-term clients.

CFDJ: **What version(s) of ColdFusion do you support?**
Friedman*:* We offer ColdFusion 5, ColdFusion MX, as well as ASP and .NET hosting. We are also investigating additional opportunities to potentially begin offering BlueDragon hosting.

CFDJ: **What do you feel separates you from other companies that offer ColdFusion hosting?**
Friedman*:* I would say it's our focus and tools specifically designed for developers and resellers. Our primary goal as part of our mission statement is to provide our customers with the best service experience they have ever received from any IT company, no exceptions. This is the primary goal of every engineer on our support team. Every call into our support center is answered by either a Level 3 CF developer or NOC (Network Operations Center) engineer. There are never any confusing phone trees or trainees answering calls in our facility.

Although none of us is perfect, our Real-Time Error Notification service allows our developer customers to appear that way. Our servers deliver real-time information to developers on all errors that occur on their customers' Web sites, including the page, refer, error, all CGI variables, browser, and several other useful tidbits of information necessary to debug coding errors. That way, problems can be corrected before the customer even knows about them.

We've developed a unique technology called The ColdFusion Self-Healer, which runs on every server in our facility. It monitors for a number of different ColdFusion and IIS problems, and automatically resolves 90% of them with no human interaction in 60 seconds or less. In these scenarios, most problems are resolved before a user even has the opportunity to pick up the phone and call to report a problem.

Our support system has been developed from the ground up with developers in mind. It allows for multiple technicians/developers/site owners to manage all of their sites, configuration, and support tickets from one console. One central administrator can monitor all of their sites, as well as tickets for all of the developers with access to each of the sites.

Our reseller plans allow developers to start receiving up to 50% discounts off our retail prices almost immediately, as compared to the 10–20 required accounts with some of our competitors. This compensates developers for the time they already spend with their clients handling Level 1 support tasks.

We have always believed that resellers and developers are our most important customers, and they have been the essential key to our growth. One of the keys in providing reliable service in a shared environ-

strengths: acquiring new clients and coding CF applications.

Our robust facility, powered by Cisco with N+1 redundancy built in, serves as a stable base of operations that achieves 99.998% network uptime for our clients. With advanced GlobalRoute technology, we can even automatically reroute traffic around most Internet brownouts, providing unsurpassed traffic delivery.

CFDJ: In terms of hosting ColdFusion sites, what aspect do you find most challenging?

Friedman: The most challenging yet fun aspect of hosting is diving into our customers' code (at their request) to troubleshoot an issue. We are often asked to determine the cause of performance-related issues caused by coding or design problems. It's quite stimulating to get a

POP3, IMAP, SMTP, and Webmail, as well as a wealth of additional features. As requirements grow, our Master CFM account at $99.95 ($49.95 for resellers/developers) per month includes 200Mb Web and 200Mb SQL Server 2000 space, SSL, and additional e-mail accounts. At our highest shared level, Semi-Private Service at $249.95 ($124.95 for resellers/developers) per month, we place only six Web sites per machine, allowing for the greatest reliability and flexibility for high-traffic sites.

CFDJ: If you could ask Macromedia for one enhancement to ColdFusion that would make your life as a hosting provider easier, what would it be?

Friedman: Instead of requesting a technical enhancement, I would ask Macromedia to spend its resources to provide better support and help the CF community grow. We believe strongly in ColdFusion as a platform and in Macromedia as a leader in Web technology, but for CF to grow and succeed there needs to be a large base of developers who understand both the benefits and the implementation of CF technology. This is the reason we provide free hosting to so many CFUGs and CF community Web sites. The larger and more educated the developer base, the larger the opportunities in the marketplace. Remember, most often, the technologists, not management, drive architecture decisions.

CFDJ: Who can readers contact for more information, or to open an account?

Friedman: Readers can contact our sales department at 888-428-2752, e-mail sales@edgewebhosting.net, or just go to our Web site at http://edgewebhosting.net to read more about what types of services we offer. Our engineers are always ready and able to answer your questions.

"Remember, most often, the technologists, not management, drive architecture decisions"

Vlad A. Friedman, CEO of Edgewebhosting.net

ment is not overutilizing your servers or infrastructure. Even on our entry-level CF accounts, we place no more than 65 Web sites per server. This ensures that the appropriate server resources are always available to our customers when they need them.

Many of our clients utilize our managed CF dedicated servers. This allows them to operate on a dedicated high-end platform without the knowledge and experience necessary to operate their own server. All backups, DNS, statistics, security patches, security management, e-mail, along with a number of other tasks, are handled by our NOC engineers, freeing our customers to focus on their greatest

grasp on a customer's application architecture (that they may have spent years developing), in a relatively short time frame, and offer design and implementation suggestions that can often double or even triple performance.

CFDJ: Can you give our readers an overview of the types of hosting plans you offer, as well as the costs?

Friedman: Our entry-level shared ColdFusion account, Expert CFM plan starts at $49.95 retail ($24.95 for resellers/developers) per month. It includes CF 5 or MX, 75Mb of disk space, real-time Web statistics, and e-mail with

About the Author

Rob Brooks-Bilson is a senior manager at Amkor Technology, where he has worked since 1996. Rob's involvement with ColdFusion goes all the way back to version 1.5. He is the author of Programming ColdFusion MX and Programming ColdFusion *(O'Reilly). Rob is a frequent speaker at ColdFusion user groups and conferences, and is also a Macromedia Certified Advanced ColdFusion Developer.*

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A Better <CFMAIL>

Another compelling reason to upgrade

O ne of the most used tags in CFML is <CFMAIL>. It is definitely the most used of all the Internet protocol tags, and as one of the original CFML tags (it was actually one of the DBML tags and originally named <DBMAIL>), it has also been slowly enhanced and updated with each new release of ColdFusion. Slowly. Maybe a little too slowly.

ColdFusion MX 6.1 introduces a whole new <CFMAIL>, a much better and much more powerful <CFMAIL>, and this month I'd like to walk you through these important changes.

Improved Performance

Let's start with performance. <CFMAIL> was never designed to be a high-performance mass mailer, and yet many developers have tried using it as just that. <CFMAIL> has always been very capable of delivering hundreds, even thousands, of messages, but that's about as far as the tag could be pushed.

ColdFusion MX 6.1 introduces important changes to the <CFMAIL> engine that facilitate dramatically increased mail-delivery performance. In fact, in testing, we clocked <CFMAIL> on a fairly typical box delivering mail at over 1,000,000 messages an hour (so fast that the bottleneck became the network and mail server rather than ColdFusion).

So what changed? Two things:
- The ColdFusion mail delivery engine now supports the use of multiple mail delivery threads. What this means is simply that ColdFusion can create multiple processes, and each can deliver mail at the same time. So, instead of just one thread processing all queued mail, multiple threads can do the job, and that translates into greater mail throughout. The number of threads defaults to 10, but you can change this number in the ColdFusion Administrator. Each thread requires system resources (some memory and a bit of CPU power), but the overhead is actually minimal and only present during mail delivery itself. As such, if you need to deliver large amounts of e-mail quickly you can raise this number as needed; the greater the number of threads ColdFusion can allocate, the more mail it can deliver concurrently. (The number specified is a maximum value; ColdFusion may actually allocate fewer threads if there's not enough queued mail to warrant all threads being allocated.)
- When ColdFusion delivers mail, it connects to an SMTP server and disconnects when done. It does this for each and every message. And the process of locating the server, opening the connection, and then closing it when done, often takes longer than the actual mail delivery. Or rather, ColdFusion used to do this. In ColdFusion MX 6.1 there is a new option (in the ColdFusion Administrator) named "Maintain connection to SMTP server", and when checked, ColdFusion keeps connections open so as to be able to reuse them for subsequent message delivery. Not having to keep making and breaking connections improves the delivery time for each and every message, so unless you have a very compelling reason not to, you should keep this checkbox checked.

<CFMAIL> performance has been improved in all versions of ColdFusion, but if you need high-volume mail delivery, then you should be using ColdFusion MX Enterprise. The two changes just described apply to ColdFusion MX Enterprise only.

Server Redundancy

One frequently requested <CFMAIL> enhancement is support for backup SMTP servers so that if a mail server is down, a backup SMTP server would be used. Support for redundant (backup) SMTP servers has been added to ColdFusion MX 6.1 Enterprise (this too is an Enterprise-only feature).

ColdFusion Administrator contains a new field (in the Mail page) named "Backup mail servers". You may specify as many servers as you like here (DNS names or IP addresses) in a comma-delimited format (you may also list backup servers right in the <CFMAIL> tag SERVER attribute). The specified servers are the backup servers, and will be used automatically if the primary SMTP server is unavailable.

It is important to note that <CFMAIL> does not support multiple mail server delivery. These additional servers are

By Ben Forta

backup servers and are used only if the primary server is unavailable. If a server (any server) is unavailable, then ColdFusion will attempt to use the next server in the list. Once a server has been flagged as unavailable, ColdFusion will not attempt to use it again for 60 seconds. If all servers are unavailable, then an error is logged.

Like the high-performance features discussed above, the ability to specify backup SMTP servers is an Enterprise-only feature. (From this point on, however, everything discussed applies to all versions of ColdFusion, including ColdFusion MX Standard).

SMTP Security

SMTP was never designed to a be a secure protocol. As we are all painfully aware, you can never really be sure who mail comes from and whether or not a FROM field contains the actual sender address. It's all too easy to submit fake SMTP e-mail to mail servers for processing.

In recent years, mail administrators have started taking steps to prevent their servers from being used to deliver unauthorized mail (commonly known as relaying). One technique that has gained popularity is to require an SMTP login. Unlike POP, which always requires a login, SMTP usually does not, but many SMTP servers now do require that login credentials be passed in in order to deliver outbound mail. If enabled, this security prevented the use of <CFMAIL>, as <CFMAIL> provided no way to specify login information.

ColdFusion MX 6.1 supports SMTP logins in two ways:
• The <CFMAIL> tag has two new attributes named USERNAME and PASSWORD. You may pass SMTP login information to these attributes, and <CFMAIL> will use this information to log in to the SMTP server.
• You may also specify login information at the server definition itself (so as not to have to pass it to every <CFMAIL> tag). Login information can be specified in the ColdFusion Administrator as part of the server name. The syntax for this is modeled on the syntax used by many Web sites: user:password@hostname. If you specify backup SMTP servers, you'll probably want to provide the login information for each and every server (assuming that they all require SMTP logins).

The ability to use SMTP logins is an important enhancement, and one that will make many server administrators very happy.

Multiple MIME Types

One of the most eagerly anticipated <CFMAIL> enhancements is the ability to include multiple bodies of different MIME types all in a single message. What does this mean? Consider the following:

You deliver reports via <CFMAIL>. Your reports are detailed, have columns, colors and fonts, use images, and more, and so you tell <CFMAIL> to deliver the e-mail in HTML, as most mail clients, including Outlook and Outlook Express, support HTML e-mail. The problem, however, is that not all users have mail clients capable of displaying HTML e-mail, so you also need to generate a plain-text version of your report for those users. Of course, this then requires that you maintain a record of which version to send to which user (probably a flag in your database). You'd need a way for users to specify the message type they'd like, and then mail generation code that might look a bit like this:

```
<!--- Check HTML mail flag --->
<CFIF user.htmlmail>
    <!--- Send HTML version --->
    <CFMAIL TO="..."
            FROM="..."
            SUBJECT="..."
            TYPE="html">
    <B>HTML body</B>
    </CFMAIL>
<CFELSE>
    <!--- Send text version --->
    <CFMAIL TO="..."
            FROM="..."
            SUBJECT="..."
            TYPE="text">
    Text body
    </CFMAIL>
</CFIF>
```

You'd need to repeat everything, not to mention maintaining the user mail preferences. You'd also not be able to use the <CFMAIL> query attribute easily, or you'd need two queries – one for text message recipients and one for HTML message recipients – and then you'd need two <CFMAIL> tags (one for each query).

There's a better way to do this. E-mail messages can actually contain multiple bodies, each of a different MIME type. The problem is that <CFMAIL> did not support the use of this fea-

ture. Until now, that is. Here's the ColdFusion MX 6.1 version of the previous example:

```
<!--- Generate mail message --->
<CFMAIL TO="..."
        FROM="..."
        SUBJECT="...">
  <!--- Generate text body --->
  <CFMAILPART TYPE="text">
     Text body goes here
  </CFMAILPART>
  <!--- Generate HTML body --->
  <CFMAILPART TYPE="html">
     <B>HTML body goes here</B>
  </CFMAILPART>
</CFMAIL>
```

As you can see, a single <CFMAIL> tag is being used along with two instances of a new tag named <CFMAILPART>. This new tag allows you to embed multiple bodies in a single message, as long as each has a different MIME type. This way it is the mail client that decides which body to display, and this makes your life a bit simpler. (It also means that your mail messages will be bigger; you'll need to decide whether or not this is acceptable.)

Any and all MIME types are supported, although in practice you'll probably use only TEXT and HTML.

> ## "The ability to use SMTP logins is an important enhancement, and one that will make many server administrators very happy"

Note: Although we're just covering <CFMAIL> in this column, it's worth noting that <CFPOP> has been similarly enhanced and now supports the retrieval of multiple bodies as well.

Other Enhancements

In addition to all the changes listed thus far, <CFMAIL> also features lots of little enhancements. Some worth noting are:

• A new REPLYTO attribute, which can be used to specify the e-mail address to which replies should be sent (previously replies would have been sent to the FROM address).

• A new FAILTO attribute, which can be used to specify the address to which SMTP delivery failure notifications should be sent. This is an important attribute for mailing list–type applications.

• A new CHARSET attribute, which can be used to specify the character encoding to be used for the mail message (overriding the default encoding specified in the ColdFusion Administrator). This attribute is present in both <CFMAIL> and <CFMAILPART>.

• A new WRAPTEXT attribute, which can be used to force a wrap (a line break) at a specified location within text messages. This attribute is present in both <CFMAIL> and <CFMAILPART>.

• A new TYPE attribute in <CFMAILPARAM>, which can be used to specify the MIME type of file attachments.

Conclusion

<CFMAIL> is an important ColdFusion tag and ranks as one of the most used tags in the CFML language. For high performance and high-availability mail delivery you should definitely consider using ColdFusion MX Enterprise. For all users, the enhancements to this tag in ColdFusion MX 6.1 provide yet another compelling reason to upgrade.

●●●

On a totally separate note, this is my 50th *CFDJ* **<BF> on <CF>** column – that's 50 back-to-back columns (with only one exception, and I'll try not to let that happen again). While writing this column, I glanced at the topics covered since way back when, and was reminded of just how far ColdFusion has come in such a short time. It's been a great ride thus far, here's to another 50!

About the Author

Ben Forta is Macromedia's senior product evangelist and the author of numerous books, including ColdFusion MX Web Application Construction Kit *and its sequel,* Advanced ColdFusion MX Application Development*, and is the series editor for the new "Reality ColdFusion" series. For more information visit* www.forta.com*.*

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downside is that newly inserted data may not be immediately available in the index and that there's a lot of overhead in the routine that runs to build an index – especially in large tables and columns.

While I also advocate the use of text indexing, I responded to I-Lin's post to point out that case insensitivity may be achieved with LIKE searches, which he hadn't mentioned.

Tammy thanked everyone for their input and rephrased and reposted her original question regarding the recommended table structure to use. I suggested creating one table that contained a unique ID as well as the path of an image, another table containing only a unique ID column and a column containing a single (unique) keyword, and a third (join) table with a unique ID and a unique ID from each of the other two tables (foreign keys).

The majority of experienced developers would most likely immediately approach the database structure this way, as it's a textbook example of a normalized structure. I-Lin Kuo offered an alternative that most developers would not usually consider, but he had a very interesting explanation.

I-Lin suggested that my solution was good when not using text indexing, but suggests that one table with the image location and a column with all of that image's metadata (key-

words) in it would actually suit Tammy's needs quite nicely. He explained that this is because the text index would essentially be doing the same thing for you (building the table of keyword lookups for the images) under the hood – without the developer having to do the work. What's more, no table joins would be required to access that data, and keyword redundancy techniques could be implemented.

This is a very interesting point. While one of the benefits and goals of the normalized structure is to have as little data as possible ever be replicated (for example, the text for each actual keyword occurs only once – in the unique keyword table), one of the features of text indexing is that it "ranks" or "scores" your results. A developer can use the same word twice (or more) to describe an image in order to give it more "weight." Imagine that – sometimes redundancy is a good thing!!

I responded to I-Lin's post, noting that there is a serious advantage to the normalized approach in that the keywords themselves are reusable (for cross-referencing and the like) across all of the tables in a database when extrapolated into their own table – something his approach does not allow. I also pointed out that in the normalized design, tables could still be text indexed to speed up lookups. His response was that until Tammy had a reason to normalize the data, why not subscribe to the Extreme Programming maxim of "Do the simplest thing that works" and normalize the data later if the need ever arises? Ultimately, this is where I-Lin and I could not see eye-to-eye.

A posting by Devandra Shrikhande followed I-Lin's and my back-and-forth discussion, pointing out that another obvious benefit of normalizing the data is the ability to easily present the user with a list of available keywords to choose from. The thread also prompted a follow-up response by Amit Talwar, who brought up yet another very interesting point.

Amit reminded us that his preference is to use a database view whenever he needs data in a nonnormalized format. He also mentioned that SQL Server does not let you Full Text Index a view, but that of all the features he'd like to see added to SQL Server, the ability to do so is on the top of his list. If anyone from the SQL Server development team is reading this article – I have to agree with Amit – this would be a killer feature. Amit also reminded us that data inserted into a database via the Web often has to be made available immediately, and that in these situations, text indexing is not a good strategy – which is extremely important to keep in mind and was a very good point to have ended the thread on.

There never was a conclusive decision as to whether it's better to Full Text Index a nonnormalized table or to normalize your tables. However, as a result of I-Lin's thinking "outside the box," a very interesting and educational discussion was born. It taught us all a little bit about the pros and cons of text indexing versus normalizing your tables. Most important of all, it showed the benefit of challenging and rethinking even the most widely accepted techniques and common-sense solutions. That, after all, is what development is all about.

KEYNOTES & HIGHLIGHTED SPEAKERS

Allan Vermeulen
CTO, Amazon.com
Sept. 30 10:00 a.m.
"Web Services Foundations"
Allan Vermeulen, CTO and vice president at Amazon.com, directly oversees the Platform Technologies group. This group is responsible for guiding Amazon.com's technology architecture, including building and acquiring foundational components. Prior to his move to Amazon.com, Vermeulen was CTO and vice president of development at Rogue Wave Software. He holds a PhD in systems design engineering from the University of Waterloo.

John Magee
Vice President,
Oracle9i Application Server, Oracle
Oct. 1 10:00 a.m.
"J2EE Development on the Grid"
John Magee is vice president of Oracle9i Application Server and Oracle9i Developer Suite at Oracle. Mr. Magee has over 14 years of experience in the enterprise software industry and has held positions in product development, product management, and product marketing. In his current role, he manages technical product marketing for Oracle's application server and development tools products, and is responsible for evangelizing Oracle technology initiatives around J2EE, XML, and Web services.

David Litwack
Senior Vice President, Web Application Development Products, Novell
Sept. 30 2:00 p.m.
"Business Integration and IT" Keynote Panel
David A. Litwack is senior vice president of Web Application Development Products, responsible for the development and advancement of Novell's secure Web services strategy. Mr. Litwack assumed his current position in July 2002 following Novell's acquisition of SilverStream Software, a company for which Litwack had served as president and CEO since 1997.

John Schmidt
Leader of Systems Integration and Middleware, Best Buy Co.
Sept. 30 2:00 p.m.
"Business Integration and IT" Keynote Panel
John Schmidt is the chairman of the Methodology Committee for the EAI Industry Consortium and leader of systems integration and middleware at Best Buy Co., a leading specialty retailer of consumer electronics, personal computers, entertainment software, and appliances.

Jon Bosak
Distinguished Engineer, Sun Microsystems
Jon Bosak organized and led the W3C working group that created the XML specification and then served for two years as chair of the W3C XML Coordination Group. At Sun, where he holds the title of Distinguished Engineer, Mr. Bosak sponsors projects intended to advance XML technology. He is currently chair of the Universal Business Language (UBL) Technical Committee of OASIS.

Dave Chappell
VP, Chief Technology Evangelist, Sonic Software
Dave Chappell is the vice president and chief technology evangelist for Sonic Software. He has more than 18 years of industry experience building software tools and infrastructure for application developers, spanning all aspects of R&D, sales, marketing, and support services. Dave has also been published in numerous technical journals, and is currently writing a series of contributed articles for *Java Developer's Journal*.

Anne Thomas Manes
Research Director, Burton Group
Anne Thomas Manes is a research director at Burton Group, a research, consulting, and advisory firm. Anne leads research for the Application Platform Strategies service. Named one of NetworkWorld's "50 Most Powerful People in Networking" in 2002, and one of Enterprise Systems Journal's "Power 100 IT Leaders" in 2001, Anne is a renowned technologist in the Web services space. Anne participates in standards development at W3C and OASIS.

Marc Fleury
President, JBoss
Marc Fleury, PhD, is chief technical officer for Telkel, Inc. He is the leader of the JBoss project (www.jboss.org), which is an open source EJB server. Marc is based out of Silicon Valley and founded the project upon leaving Sun Microsystems. He was one of the main developers behind JBoss 1.0 and 2.0. Marc is the "keeper" of the project. He founded the Jboss Group, a company regrouping the elite developers of Jboss to consult around Jboss.

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		JAVA	.NET	WEB SERVICES	
TUESDAY, SEPTEMBER 30	8:00AM – 4:00PM	REGISTRATION			
	9:00AM – 9:50AM	The Next Phase in Evolution of J2EE	Using WSE 2.0	Web Services Management	
	10:00AM – 10:50AM	Keynote - "Web Services Foundations" - Allen Vermeulen, CTO and Vice President, Amazon.com			
	11:00AM – 6:00PM	EXPO OPEN			
	2:00PM – 2:50PM	Keynote Panel Discussion - Business Integration and *i*-Technology			
	3:00PM – 3:50PM	Ant Applied in "Real World" Web Services	Smart Devices in the Enterprise	Building Interoperable Web Services Using WS-I Basic Profile	
	4:00PM – 4:50PM	Developing Applications with SWT	Using the Mobile Internet Toolkit	Web Services Orchestration	
	5:00PM	OPENING NIGHT RECEPTION			
WEDNESDAY, OCTOBER 1	8:00AM – 4:00PM	REGISTRATION			
	9:00AM – 9:50AM	Empowering Java and RSS for Blogging	Introduction to ROTOR	ID, Please. The Case for Giving Web Services an Identity	
	10:00AM – 10:50AM	Morning Keynote - "J2EE Development on the Grid" - John Magee, Vice President, Oracle9i, Oracle			
	11:00AM – 4:00PM	EXPO OPEN			
	2:00PM – 2:50PM	Keynote Panel Discussion - Interoperability: Is Web Services Delivering?			
	3:00PM – 3:50PM	JUnit: Testing Your Java with JUnit	Using Portable .NET	WS-BPEL	
	4:00PM – 4:50PM	JDK1.5: The Tiger	ASP.NET with Mono	UDDI: Dead or Alive?	
	5:00PM – 6:00PM	Squeezing Java	Using WSE with IBM's Web Services Tool Kit	Web Services Choreography, Management, and Security - Can They Dance Together?	
THURSDAY, OCTOBER 2	8:00AM – 4:00PM	REGISTRATION			
	9:00AM – 9:50AM	Leveraging AOP in JBoss	Success Story: Eiffel, .NET, and Design by Contract for the Financial Industry	Strategies for Securing Web Services	
	10:00AM – 10:50AM	Technical Keynote			
	11:00AM – 11:50AM	Apache Axis	.NET IDE's	Web Services Progress Report	
	12:00PM	LUNCH			
	1:00PM – 1:50PM	Meeting the Challenges of J2ME Development	Windows SharePoint Services	The Seven Habits of Highly Effective Enterprise Service Buses (ESBs)	
	2:00PM – 2:50PM	Keynote Panel Discussion - Summit on Web Services Standards			
	3:00PM – 3:50PM	Simplifying J2EE Applications	BizTalk 2004	See www.sys-con.com for more information	
	4:00PM – 5:00PM	Integrating Java + .NET	See www.sys-con.com for more information	See www.sys-con.com for more information	

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Total Registration fee $_____

	By 9/5/03	Before 9/26/03	Onsite
☐ **GP Gold Passport** Good for all three days of the .NET, Web Services, XML, Java, and Mac OS X Tracks, including preferred seating for the Oracle, IBM and Microsoft Russ' Toolshed Tutorials, Keynotes, Panel Discussions, and your choice of One Sun Microsystems Java University℠ Class Select one: ☐ Architecting Web Services Using J2EE (Oct. 1) ☐ Java 2 Platform: Architect Certification Fast Path (Oct. 2)	$1,295.00	$1,395.00	$1,495.00
☐ **3D Three Day Conference** (Does not include Sun Java Education)	$1,195.00	$1,295.00	$1,395.00
☐ **2D Two Day Conference** (Does not include Sun Java Education) (select any two days: ☐ Tue. ☐ Wed. ☐ Thurs.)	$1095.00	$1,195.00	$1,295.00
☐ **1D One Day Conference** (Does not include Sun Java™ Education) (select any one day: ☐ Tue. ☐ Wed. ☐ Thurs.)	$595.00	$595.00	$695.00
☐ **JU1 Sun Java™ University Class** Select one: ☐ Architecting Web Services Using J2EE (Oct. 1) ☐ Java 2 Platform: Architect Certification Fast Path (Oct. 2)	$695.00	$695.00	$795.00
☐ **JU2 Sun Java University Class** Attend both Architecting Web Services Using J2EE (Oct. 1) and Java 2 Platform: Architect Certification Fast Path (Oct. 2)	$1,195.00	$1,295.00	$1,395.00
☐ **VIP PASS** Good for access to the Exhibit Floor, Keynotes and Panel Discussions, Product Demonstrations, and your choice of (Select one): ☐ Microsoft Russ' Tool Shed (Sept. 30) ☐ How to Develop, Deploy, and Manage Web Services Using IBM Tools (Sept. 30) ☐ Web Services Workshop presented by Oracle (Oct. 1)	FREE	FREE	$50.00
☐ **EO Expo Only**	FREE	FREE	$50.00

4

A. Your Job Title

☐ CTO, CIO, VP, Chief Architect
☐ Software Development Director/Manager/Evangelist
☐ IT Director/Manager
☐ 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
☐ VP/Director/Manager Marketing, Sales
☐ VP/Director/Manager of Product Development
☐ General Division Manager/Department Manager
☐ Other (please specify)_____

B. Business/Industry

☐ Computer Software
☐ Computer Hardware and Electronics
☐ Computer Networking & Telecommunications
☐ Internet/Web/E-commerce
☐ Consulting & Systems Integrator
☐ Financial Services
☐ Manufacturing
☐ Wholesale/Retail/Distribution
☐ Transportation
☐ Travel/Hospitality
☐ Government/Military/Aerospace
☐ Health Care/Medical
☐ Insurance/Legal
☐ Education
☐ Utilities
☐ Architecture/Construction/Real Estate
☐ Agriculture
☐ Nonprofit/Religious
☐ Other (please specify)
_____

C. Total number of employees at your location and entire organization (check all that apply):

	Location	Company
10,000 or more	01 ☐	01 ☐
5,000 – 9,999	02 ☐	02 ☐
1,000 – 4,999	03 ☐	03 ☐
500 – 999	04 ☐	04 ☐
100 – 499	05 ☐	05 ☐
100 or less	06 ☐	06 ☐

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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Macromedia ColdFusion MX 6.1 Now Available

(*San Francisco*) – Macromedia has announced the immediate availability of Macromedia ColdFusion MX 6.1,which extends the product's unmatched ability to deliver speed, savings, and standards to Web application development.

"Macromedia ColdFusion MX currently meets the demands of thousands of organizations, giving them a competitive advantage in building Internet applications," said Phil Costa, senior product manager, Macromedia. "This update gives users better stability and reliability as well as substantial performance gains."

Performance benchmarks of Macromedia ColdFusion MX 6.1 demonstrate runtime improvements of up to 172% over ColdFusion 5, which translates into a better end-user experience and reduced infrastructure costs over time. In addition, dynamic e-mail generation has been dramatically enhanced, enabling users to deliver messages more than 50 times faster than with previous releases.

ColdFusion MX 6.1 is also easier to use and administer, with increased backward compatibility, improved installation and configuration tools, and updated Windows, Solaris, and Linux OS version support. ColdFusion MX 6.1 also now includes a new offering of bundled installation support, providing direct access to expert technical assistance for customers who need it.

The ColdFusion MX editions have been streamlined as part of this update, so users can more easily select the option that fits their needs. ColdFusion MX 6.1 is available in both Enterprise and Standard editions.

The new Enterprise Edition packaging provides everything customers need to deliver advanced applications with high performance, security, and reliability. ColdFusion MX Enterprise can be deployed as a standalone server, on the bundled version of Macromedia JRun, or on third-party application servers such as IBM WebSphere, BEA WebLogic, or Sun ONE. As a result, customers can more easily integrate ColdFusion with their chosen environment while increasing security and reliability by isolating applications in separate instances of ColdFusion running on a single server.

The entry-level edition has been renamed ColdFusion MX Standard and is targeted for organizations building basic Web sites and small- to medium-sized applications.

ColdFusion is the Macromedia MX solution for rapidly building and deploying powerful Web applications and Web services. More than 10,000 companies worldwide, including 75 of the Fortune 100 and 20 of the Media Metrix Top 50 Web Properties, use Macromedia ColdFusion to deliver powerful Web applications and Web services with less training time and fewer lines of code.

Macromedia ColdFusion MX 6.1 is available for immediate purchase from the Macromedia Online Store (www.macromedia.com/store). The update is free for existing ColdFusion MX customers. ColdFusion MX Standard 6.1 is priced at $1,299 per server, with upgrades from ColdFusion 4.5 and 5 at $649 per server. ColdFusion MX Enterprise 6.1 is priced at $5,999 per two processors, with upgrades from ColdFusion 4.5 and 5 available for $2,999 per two processors. Volume, education, and government licensing is available. Detailed information and the update can be found at www.macrome dia.com/go/cfmx.

Macromedia Renews J2EE License Agreement for JRun

(*San Francisco*) – Macromedia has announced that it has renewed its Java 2 Platform, Enterprise Edition (J2EE) licensing agreement with Sun Microsystems, Inc. Macromedia has been a licensee for more than three years. This renewal means that Macromedia JRun can continue to deliver commercial-grade, highly affordable J2EE technology to businesses and ISVs worldwide.

Macromedia JRun has helped spur the adoption of Java technology since its introduction in 1997. More than 10,000 organizations use Macromedia JRun because of its ability to help make J2EE technology accessible, approachable, and affordable. Macromedia embeds JRun in both the Macromedia ColdFusion MX and Macromedia Breeze product lines and relies on JRun to power the macromedia.com corporate Web site. www.macromedia.com/software/jrun

Announcing MAX: the 2003 Macromedia User Conference

Macromedia MAX 2003

(*San Francisco*) – MAX, a new conference that combines DevCon and UCON, is Macromedia's annual professional conference for Macromedia developers and designers. It's scheduled for November 18–21 at the Salt Palace Convention Center in Salt Lake City, Utah.

This year, the Macromedia conference has a new name and a new venue, reflecting an exciting evolution for the conference and the company's customers. The name change is designed to express their goal – that MAX appeals to the broadest range of Macromedia customers. Stay tuned for details. www.macromedia.com/macromedia/conference

Macromedia Reports First Quarter Fiscal Year 2004 Results

(*San Francisco*) – Macromedia has announced first quarter of fiscal year 2004 results. Net revenues for the three months ended June 30, 2003, were $83.1 million, compared with net revenues of $84.3 million reported in the comparable period a year ago. Net income for the three months ended June 30, 2003, was $6.7 million or $0.10 per diluted share compared to a net loss of $2.0 million or $0.03 per share for the comparable quarter a year ago.

"While our core products continue to lead the industry, our new offerings like Contribute 2, Breeze Live, and Flash for mobile are starting to really gain traction," said Rob Burgess, chairman and CEO, Macromedia. "We are all very excited about all the new software and solutions we are bringing to market to streamline the process of making great digital experiences."

During the quarter, Macromedia continued to make significant strides in its three key markets of design/development; information convenience; and mobile solutions.

Macromedia Studio MX, the most successful product in Macromedia history, maintained its strong competitive position a full year after its introduction. The individual products within the Studio solution also remained solid, with Macromedia Dreamweaver MX standing as the company's largest individual product with leading market share for the professional Web development space.

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