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VOL: 1 ISSUE: 2

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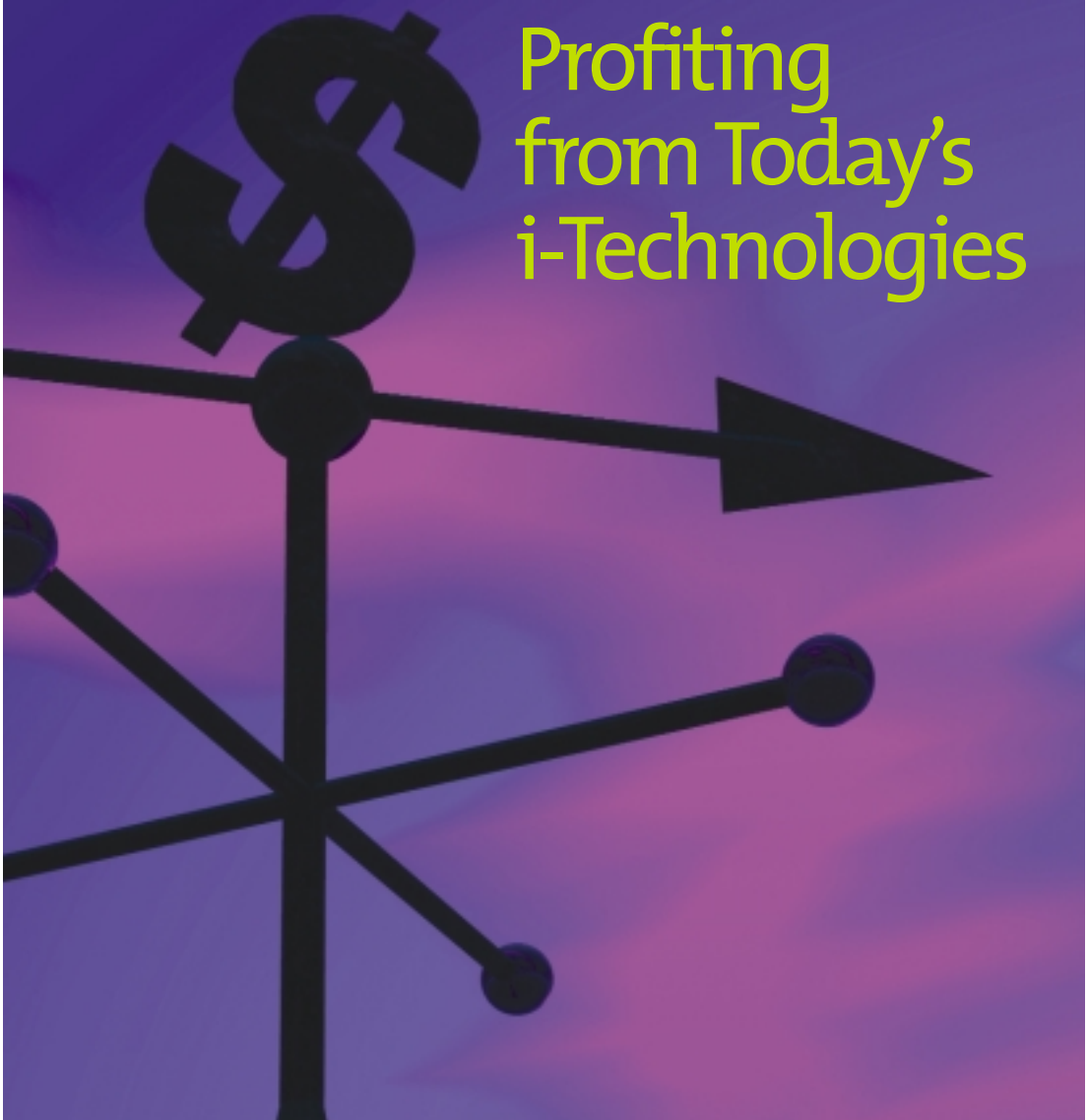
Profiting from Today's i-Technologies



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With its easy to use, forms-based user interface, built in code generators, query builders, adapters and transformation wizards, the FusionWare Integration Server provides a point and click environment that simplfies Web Services development and puts you in the fast lane to intelligent integration.

If you are falling behind on Web Services integration, contact FusionWare today at **sales@fusionware.net.**

FusionWare Corporation

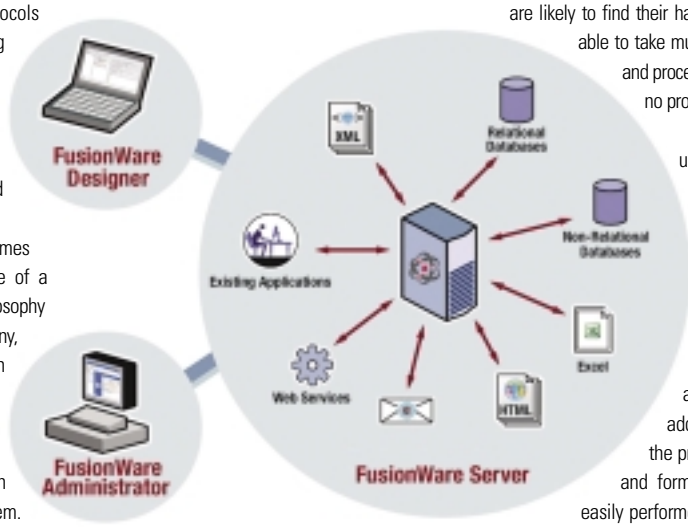
www.fusionware.net

FusionWare:

Reducing Complexity Through FusionWare Integration Server

There must be 50 ways to Web services–enable a legacy system, and at least 500 ways for consultants to make money off companies attempting to do so. While I don't mean to knock the consulting profession (I am one myself, after all), there are some things companies should be able to do on their own. That includes extending new data sources to applications, or bringing on new electronic trading partners. I've heard accounts of companies taking up to six months trying to agree on formats and protocols before exchanging purchase orders and acknowledgements – an exercise that must have put many a consultant's child through college.

FusionWare comes to market with more of a "do-it-yourself" philosophy in mind. The company, with roots deep within the non-relational multivalue database space, understands what it takes to open up a legacy system. After a history of developing and supporting legacy databases and systems FusionWare knows how to stay focused on business needs, knowing that clients have no stomach for getting mired in the technical details. FusionWare is now bringing this business sensibility to a broader market – companies with any database that needs to quickly establish Web services links without breaking the bank.



FusionWare Integration Server, released in June, seeks to offer Web services solutions to businesses that don't have the time, talent, or money to learn Web services. FusionWare itself calls this a "very pragmatic" target segment – business before technology. These organizations may have a heavy investment in legacy systems, but limited expertise in newer technologies such as .NET, Java, XML, and Web services. I recently had the opportunity to talk with CEO Alan Davis, and as he puts it, "A non-programmer, or somebody who's more of an analyst than programmer, can put together a business process workflow and implement an application with very little training."

Is the product as easy as they say? I took a test run of FusionWare, and found it to be a fairly intuitive Web services building environment, much like Visual Basic. The tool automatically identifies documents, and includes an XPath generator, query builders, XSLT wizards, and backend adapters. The product comes in three components: FusionWare Designer, a Windows-based integrated development environment; FusionWare Server, the deployment server; and FusionWare Administrator, for monitoring and managing the Web services environment.

FusionWare takes data from any data source (and they do mean any source), converts it to XML, and redeploys it to the Web service being invoked. FusionWare executives point out that many companies these days are likely to find their hands forced by trading partners. Being able to take mulitple partners' proprietary documents and process them internally in a standard way is no problem with FusionWare.

With the FusionWare Designer, users do not actually have to write code; they simply fill in a form, and are prompted to include the proper data elements and services. The Designer then generates the code for them. The workflow may involve identifying data within a proprietary database, and making the data available to the application at hand. When additional trading partners come online, the program already provides the structure and format and so a simple transformation easily performed with the XSLT wizard is all that is needed to add a new partner to the system. The entire process takes a few minutes.

FusionWare executives stress that no application or database type is beyond their grasp. The solution "connects to any database, connects to COM, connects to Java, and connects to Web services you might already have or that your partners might already have," says Davis.

FusionWare offers a different approach from many of the legacy-to-Web services solutions currently on the market. Many integration environments require a robust middleware tier – consisting of a separate Windows, Linux, or Unix server that can run replicated business processes while accessing back-end data repositories. Other vendors offer tools that will either wrapper or recompile libraries of legacy code into Java or a .NET-friendly language. Such approaches, of course, are non-trivial tasks for any IT shop. FusionWare's server – with a mere three-megabyte footprint – can be plopped on any connected server and be put to work. ■

FusionWare Corporation

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For FusionWare NA, Europe & South Africa: +1.949.250.4800 or
sales@fusionware.net
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About the Author

Joe McKendrick is a research consultant and author specializing in information technology and management trends.

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* Support for run-time XSL input parameters
* Support for inclusion of other Web pages and Web languages

FREE trial. Download at www.xslmaker.com

Promind Systems' XSL maker:

Complete Toolset for Building Web Pages from XML Data with XSL & CSS

XSLmaker provides Web developers with single development environment for integrating all components of a fully featured Web page using XSL.

It is becoming increasingly important to create Web pages based on XML data content. Until the introduction of XSL maker, the lack of professional tools has made this task excessively costly and time-consuming.

Challenges of Building Web Pages from XML Data in XSL Technology

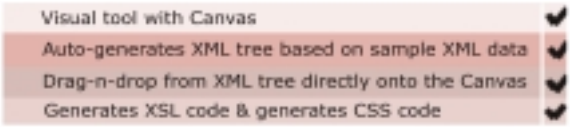
Developing professional Web pages based on XML data using XSL has historically been a time-consuming and expensive task due to the following challenges:

- Basic knowledge of XSL is insufficient for implementing fully-featured Web pages
- Hand-coding in XSL is very time-consuming
- Existing XSL code editor and mapper products are not sufficient for building professional-grade Web pages
- No XSL tools support both XSL and CSS
- In XSL it is very difficult to incorporate other Web languages such as JavaScript, Struts, VBScript, Php, ASP etc that are necessary to build fully-featured professional Web pages
- These complexities are exponentially compounded when Web pages need to perform advanced operations such as: joining content from multiple XML sources; reading live XML/RSS feeds; and including other Web pages

XSLmaker was developed to overcome these challenges to the widespread realization of the significant benefits of Web pages based on XML. XSLmaker is a development environment that integrates all of the components required to develop fully-featured Web pages using XSL.

Simplifying XSL Development

Efficiently building professional-grade Web pages requires a Canvas where XML content can be dragged-and-dropped, positioned, resized on a pixel level and styled directly. Moreover, XSL and CSS code needs to be automatically generated through each of these transformations. XSLmaker provides all of these features to ensure that XSL Web page development is as simple as possible.

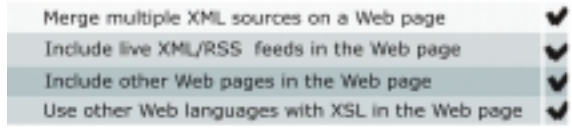


XSLmaker: Easy and Intuitive

XSL maker is built to be easy and intuitive. Instead of requiring strict XML DTD definitions, sample XML is sufficient. Instead of having to write code, a simple drag-and-drop action on the Canvas generates the code. Instead of having to think about XSL template matches, a Wizard enables prototyping of different combinations visually until the right one is found – all without even needing to understand Template Match.

Realize the Full Benefit of XSL-built Web Pages

XSLmaker fully supports development of the advanced features that make Web pages built from XML data compelling:



Merge multiple XML sources

Xpath and an XSL variable Wizard provide an easy way to join different XML content based on any criteria. One of the many educational videos available at www.xslmaker.com explains this highly popular technique step-by-step.

Include content from live RSS/XML feeds

Input XML definition allows references to live sources of XML/RSS data, making the inclusion of live feeds into Web pages easy. Even the run-time programmatic definition of XML feeds is permitted.

Include other Web pages and other Web languages

Other Web pages can be included point-and-click style, making it ideal for reusing pre-built menus, ads and content to create a consistent look and feel. Moreover, XSLmaker enables the incorporation of code written in other Web languages as either blocks of code or in attributes and even generation of such code at run-time.

Availability of rich CSS styling enables developers to achieve professional look and feel

CSS's rich styling capabilities can be realized quickly using our CSS Toolbox, Wizards for point-and-click styling.

XSLmaker can even be used just for learning XSL

As elements are put on the Canvas, XSL and CSS code is generated. When any element on the Canvas is selected, the XSL editor scrolls to and highlights the underlying element code – making it easy to learn by example. XSLmaker is also a complete code editor suitable for learning basics of the syntax.

The Only Total Solution for Professional-grade XSL Web Site Development

XSLmaker is the only tool to provide a total solution for the development of Web pages in XSL:

- Combines the strength of XSL with CSS to enable professional Web development
- Provides a Canvas with positioning, moving and resizing capabilities on a pixel level
- Includes a graphical XML mapper and Xpath wizards that transform XML to XML – no need to purchase separate tools

It is our goal to provide a complete tool integrating all of the key functions for XSL development as well as the ongoing support and educational tools to bring new users rapidly up to speed.

Examples of Highly Complex Web Pages Done in XSL

Visit www.xlsmaker.com for examples of complex Web sites created with XSLmaker, including the MSN.com Web page and a growing library of developer-suggested projects that can be immediately used. ■

ProMind Systems is a San Francisco based company founded in 1996.

XSLmaker represents the commercialization of technology developed by Promind Systems for DARPA. For more information visit www.xslmaker.com

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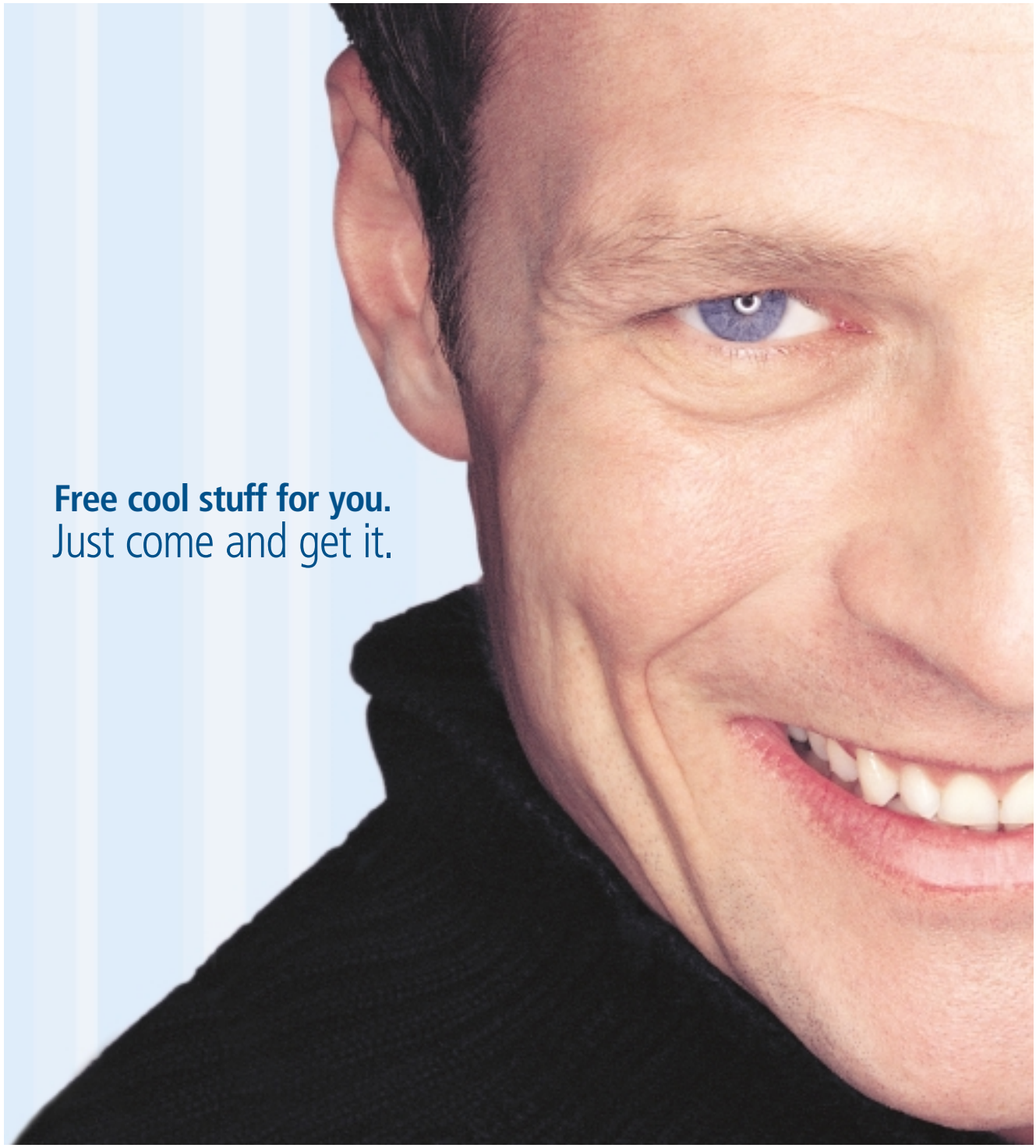

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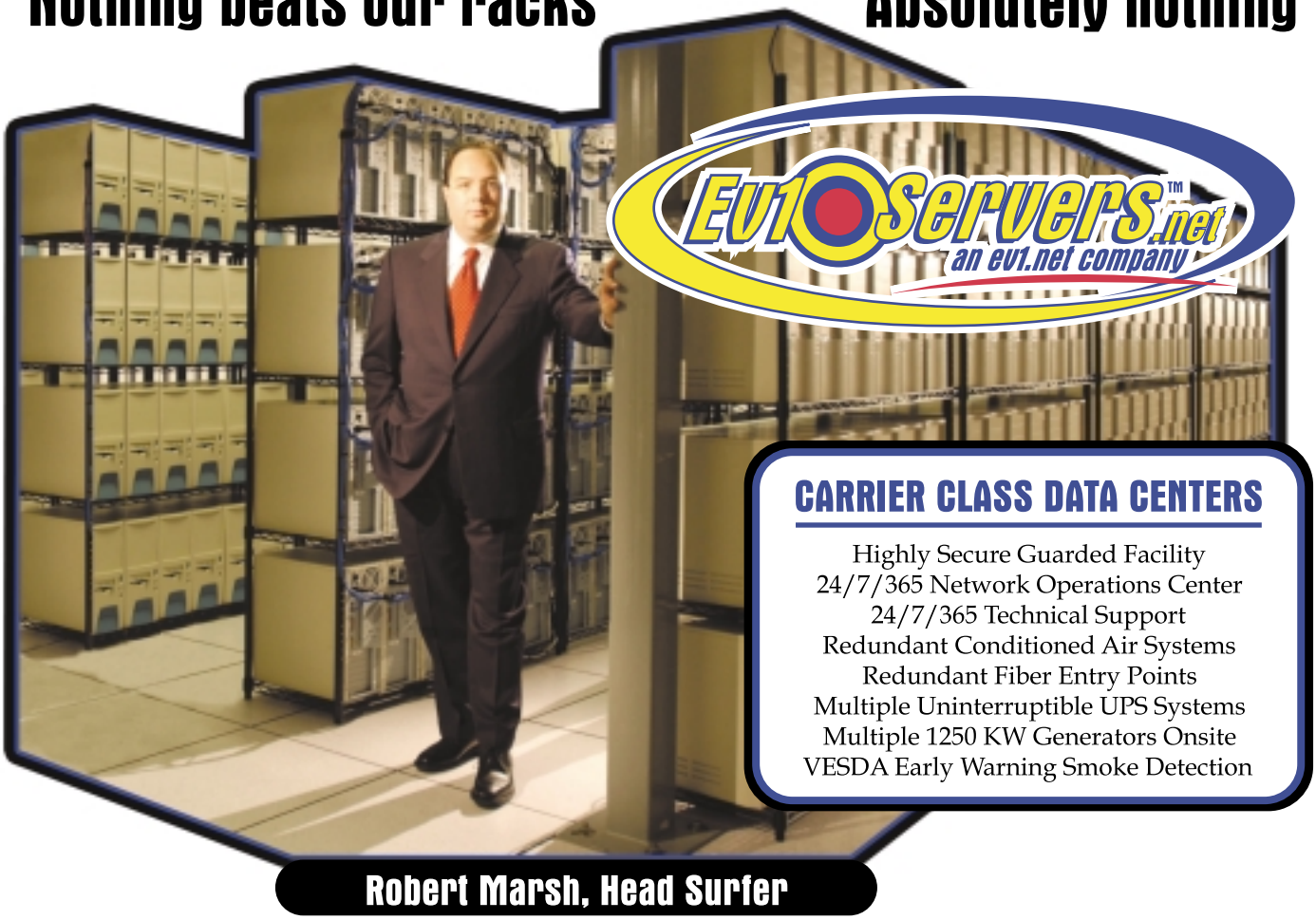

Robert Marsh, Head Surfer

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http://www.ev1servers.net

Since 2000, I've had the good fortune of working with over 15,000 EV1Servers customers, including enterprise managers and small business owners, software developers and multi-player gamers, content providers and community forum operators.

Ongoing interactions with these dedicated Web server users have helped shape our direction. I would like to think that we have also contributed to our customers' success. Many of them have expanded from one single server to dozens – or even hundreds – during the course of our partnership.

I have often heard that Web hosting is a commodity business in which three factors – pricing, bandwidth and disk space – are all-important. While we have always strived to be competitive on these fronts, it's the factors below that have made a real impact on our ability to maintain long-term customer relationships.

Home Safe Home

Earlier this year we invested $15 million into building out our second data center, a telco-grade facility with redundant UPS, generator backup, smoke detection/fire protection systems, not to mention 24x7 camera surveillance and armed guard patrol.

Our grand opening was attended by customers from 18 states as well as Canada, Mexico, Germany, and England. Several placed orders on the spot for full racks of Dual Xeon servers. We had planned to take our visitors to the Houston Rodeo, but so eager were they to move in that they spent the evening instead at our data center.

Clear Connection

One of the most popular areas on our Web site contains our network utilization graphs. We have 19 Gigabit Ethernet links – and counting – through six backbone providers. Their fiber connects to our facilities at redundant entry points.

Of course, there is more to our network than speed and reliability. FireSlayer, a system that combines commercial and proprietary denial of service filtering technology, has intercepted more than 700 attacks per month since its early 2004 rollout.

Freedom of Choice

Although EV1Servers was a relative latecomer to the Web hosting market, we became the world's largest dedicated Web server provider within two years. I attribute much of our success to two concepts we pioneered: giving customers instant access to newly ordered servers, and allowing no-questions-asked cancellation at the end of any monthly billing cycle.

Having won customers over by delivering service when they want it, our 2004 focus has been on providing service how they want it. We've introduced new solutions ranging from load-balanced clusters to low-cost storage. We've added remote reboot and remote console capabilities to over 20,000 servers. We've even developed an automated system that allows users to reinstall their operating system and server management software of choice at no cost.

You've Got a Friend at EV1Servers

It goes without saying that we provide 24x7 support by phone, e-mail, IRC, live chat, etc. Who doesn't, in this day and age? What sets us apart is that "customer service" is not just a nameless, faceless entity at EV1Servers.

I would venture to say that we are second to none within the industry in terms of accountability and accessibility. All members of our management team – including myself – participate regularly in our customer forum. We even make our management team mailing list publicly available, so that any customer is able to contact us at any time.

If you're a user of third-party Web hosting services, I encourage you to be no less demanding than EV1Servers' customers have been over the years. By making your needs known, you are helping to create a better hosting environment for your business. And if you are a service provider catering to either an internal or external constituency, keep in mind that you succeed only when the needs of your user base are met. ■

Robert Marsh is the CEO and head surfer of EV1Servers, the world's largest dedicated hosting provider with over 20,000 servers under management. The company's data centers are home to over 1 million Web sites and its network accounts for over 1.5% of all U.S. Internet traffic. Robert was recently named Houston Small Business Person of the Year by the U.S. Small Business Administration, and Houston/Gulf Coast Area Entrepreneur of the Year by Ernst & Young.

Itemfield:
Defining the Benchmark for Complex Data Transformations

Achieving the "complexity advantage" in business integration

In today's IT environment, complex data represents an ever-increasing proportion of enterprise data. Companies are struggling to transform and integrate complex data and often turn to costly IT development. Business drivers, such as customer self-service, regulatory compliance (e.g., Sarbanes-Oxley), operational and IT efficiency require high-performance, mission-critical applications that exploit real-time data transformations between a variety of complex data formats.

The challenge of complex data transformation is the ability to address the diversity of very complicated, poorly defined or undefined data formats used by applications. Common examples of complex data include large XML documents (containing thousands of elements and/or attachments), binary files (e.g., spreadsheets and PDFs), loosely implemented vertical "standards" such as HL7 in healthcare and ACORD in insurance, and complex COBOL in legacy applications. Complex data transformation can account for as much as two-thirds of the implementation cost in a business integration initiative.

Unfortunately, early approaches to business integration, which were based on traditional middleware, fell short when it came to solving the problem of complex data transformation. They required expensive to maintain custom integration code. Modern middleware, including Web services integration, the Enterprise Service Bus (ESB) and adapters, also fall short in integrating complex data in business integration. We will discuss attributes of each below.

Web Services Integration

Web services-based integration will likely create an even greater need for a clean solution to the problem of complex data transformation. This is because Web services per se do nothing to solve the problem of data transformation. And, the transformation technology that underlies today's Web services integration solutions – eXtensible Stylesheet Language Transformation (XSLT) – does not support complex data.

Enterprise Service Buses

ESBs are optimized for XML-oriented data transformation and rely on XSLT-based tooling for defining transformations. This code is difficult if not impossible to write in XSLT, which as noted earlier, has no support for complex data.

Adapters

Some technology adapters have "hooks" that allow the insertion of complex data transformation code, but this doesn't solve the problem of having to hand-code such transformations. The use of application adapters as a solution to complex data transforma-

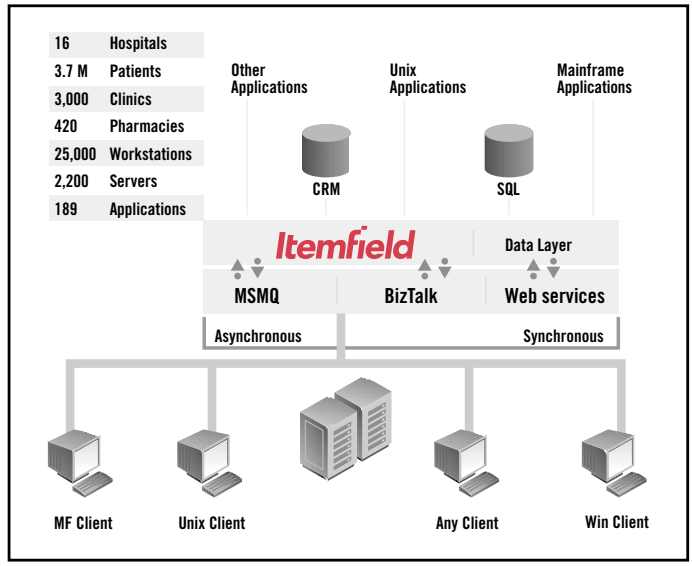

Figure 1: Healthcare Solution

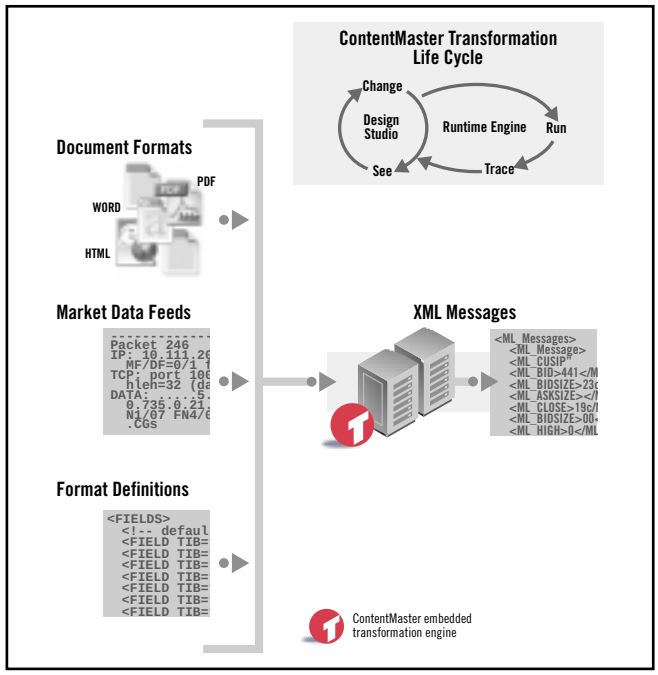

Figure 2: Financial Services Solution

tion will result in "spaghetti" code.

Defining the Next-Generation Data Transformation Solutions

These solutions must allow any form of enterprise data to be transformed from within one comprehensive and user-friendly environment, enabling real-time execution, eliminating costly IT developments and enhancing usability of existing infrastructure software.

Itemfield's ContentMaster ™ is the next generation of data transformation, automating the transformation of complex data seamlessly into existing business integration infrastructure. Now IT environments can transform any form of enterprise data within one comprehensive, user-friendly environment.

Healthcare Company Achieves the Complexity Advantage in Business Integration

ContentMaster enabled the savings of four person-years on initial deployment/one person-year annually for maintenance.

The health services organization is one of the largest public health networks in the world and provides comprehensive health insurance, medical care and services to 16 hospitals, more than 1,300 clinics, and over 3.7 million patients. To consolidate patient records, the customer had to integrate information legacy systems and documents, including: over 300 disparate data formats; proprietary data used by hospital/clinics; complex data produced by legacy applications that could not be changed; and a variety of document formats used by hospitals and clinics that needed to be integrated.

Itemfield's ContentMaster addressed the problem of data format diversity, by using Itemfield's patented Parsing-by-Example technology to avoid custom conversion code – and the enormous development effort that would have entailed. ContentMaster eliminated the requirement to build a special conversion tool for each of the 300 formats. In addition, no maintenance was required for parsers. As a result, more than a year of development and code writing were eliminated.

The health services organization's ROI was driven by shorter development cycles, automated complex data integration; and dramatically simplified maintenance.

Financial Services Provider Estimates a 300% Improvement in Project Time-to-Market

ContentMaster enables a 500% improvement in maintenance and extensibility over old system.

The customer is one of the world's leading financial services organizations, providing equity research to private clients and market data feeds. End-users rely on information such as equity assessments to make significant buy/sell decisions. The timeliness and accuracy of this information is a key competitive edge for the customer. The customer needed to replace the existing system, and put in place a solution capable of extracting the structure of, and tracking changes to, documents coming from various data sources.

The data transformation challenges involved the extraction and change tracking of a wide variety of formats, including PDF, Word, HTML, Palm OS, Blackberry, and market data feeds. Using ContentMaster, the customer created a solution that allowed them to publish their equity research – in many different formats – to end-users in near real-time and enabled the interoperability of their disparate application and integration platforms.

With ContentMaster, enterprises can enable their core real-time enterprise computing initiatives and achieve the "complexity advantage" in business integration.

For more information on ContentMaster or a free copy of our white paper on data transformation, visit our website at www.itemfield.com/editorial ■

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- Stability and Robustness

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Seamlessly Displaying Web Content Within Your Java Application

WebRenderer bridges the gap between client/server architectures by providing standards-compliant Web content rendering.

Within today's vast Web infrastructure businesses run distributed systems. These distributed systems serve an array of content, more often than not in a web descriptive form such as HTML.

The challenge for client-side Java applications is to display this rich Web content in a meaningful way. Java does not have a standards-compliant Web content rendering engine built into the J2SE SDK. This poses a challenge for Java developers with a requirement to display rich Web content.

Java rich-client application developers are forced to use the built-in system browser external to their rich-client application when displaying Web content (due to a lack of means to display Web content).

WebRenderer addresses this limitation by providing a standards-compliant web content rendering component that can be embedded within Java applications.

The Challenge

The challenge with Web-based content is by virtue of the number, complexity and evolving nature of Web standards.

Basic Web content rendering components must support standards such as HTML, CSS, JavaScript and SSL. When building a Web content display component these base standards must be incorporated. Without support for these standards pages will either not render or render in a nonstandards compliant manner thus leading to a distorted visual appearance.

WebRenderer addresses this challenge by leveraging off Internet Explorer, Mozilla and Safari browser technologies providing access to the three world leading browsers across multiple platforms.

The Cost of Coding

WebRenderer can be easily integrated into a Java client application with as little as 3 lines of code. Through web content rendering, Java applications can capitalize on existing J2EE and Web resources/infrastructures in delivering a distributed rich client application.

WebRenderer provides the ability to connect the client application to the server business logic without changing server code or infrastructure. There are no unnecessary changes to complex server environments.

Solving Business Problems

Digital Harbor™, a leading composite application vendor, uses WebRenderer to "connect the dots" between enterprise databases, Web services and business logic with the largely untapped wealth of information stored in Web pages, e-mails, presentations and documents.

The problem in most organizations is not a lack of information. It is that the information exists in many places and is organized in many ways, so the average end user must know what system to use or whom to call in order to access it.

Instead of requiring users to access yet another application, Digital Harbor provides a common view of customer information "on the fly" and in the context it makes most sense in the applications they use – simply by pointing and clicking.

JadeLiquid's WebRenderer allows Digital Harbor to code against a single Web browser without sacrificing the native functionality of Internet Explorer, Mozilla or Safari.

Using Digital Harbor's PiiE™ platform that incorporates WebRenderer, a salesperson viewing a Web site magazine would see the names of existing customers highlighted within the Web page. From those links, PiiE allows the salesperson to look up the customer details and contact information.

With Digital Harbor and WebRenderer you can know everything that your company and the web knows.

Business Benefits

- WebRenderer has a low cost of ownership.
- Significant time-to-market savings over developing in-house Java browser components. WebRenderer enables developers to concentrate on the end product.
- Cost and timesavings of embedding WebRenderer lead to a high ROI.
- Third-party components are tried and industry tested. Component reusability significantly speeds up future developments.
- WebRenderer is the leading Java browser component and the only standards-compliant Java Web content rendering component commercially available.

WebRenderer is available for a free 30-day trial at www.webrenderer.com ■

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PointBase:
J2EE Development with PointBase Embedded

The only database to use when you're programming in Java

Steve Jones is the managing director for engineering and support at PointBase. He is responsible for PointBase product development, which includes an innovative family of 100% Java, SQL Relational Database Management (RDBMS), and Synchronization products that are ideal for embedding in a wide range of applications. Because they are all Java, they are highly portable.

Here, he talks about the need for embedded products and what they can do.

Can you briefly describe the reason PointBase exists in the market today? Where did DataMirror see a need for this type of offering?

PointBase Embedded provides full SQL functionality for the Java developer. By being implemented in Java itself, it can be deployed along with your application, retaining all the benefits of a 100% Java solution, such as complete platform portability.

What is an embedded Java database?

It is an RDBMS that not only provides full SQL functionality, but can be embedded within, and deployed with, the application. For a Java application, the RDBMS must itself be implemented 100% in Java. Additionally, it must be designed to run without requiring a DBA. All functionality must be accessible to the program through API calls, not requiring separate utilities to be run. And it must be small enough to make it feasible to include within the application.

A few years back, object-oriented databases had also come up with an alternative to RDBMS-based data storage. That didn't last long. Why are embedded databases such a good thing?

PointBase is ANSI standard SQL so you don't have to learn a new paradigm like OODBMS. And the storage is still relational; therefore, the transformation to and from standard relational databases is straightforward.

What issues in traditional RDBMS databases do embedded Java databases address?

Complexity, difficulty in installation, overhead in administration. PointBase can, for example, quickly and painlessly create a database without all the hassles of tablespaces, etc. associated with an enterprise system.

What are the main benefits of using embedded databases?

A big one is simplifying testing, packaging, and deployment of software. Java gives you portability across a variety of OS and hardware platforms. By bundling or embedding your Java database, you can have a single offering, which can be tested, packaged and deployed. You lose that if you have a native DBMS that has different binaries for each platform.

What is the overall feature set that PointBase provides?

PointBase Embedded has a very rich SQL implementation, including views, triggers, stored procedures, integrity constraints, hash joins, SQL security and more. PointBase UniSync and DataMirror Transformation Server provide powerful capabilities to exchange data with your corporate database, enabling web services and data marts, for example.

In what way is PointBase Embedded a better option as compared to similar products?

Often times the Java database contains a cached subset from a corporate database. PointBase has the superior ability to extract this subset and remain synchronized with the database of record. PointBase Embedded is more mature. It has a more complete feature set and is much faster.

How does the product scale for enterprise applications in terms of transaction volumes, robustness, and security?

Very well. Our architects previously worked on major enterprise systems (Oracle, IBM, Sybase, Informix), so under the hood we're very advanced in locking, logging, and recovery. One of our customers does 12,000 queries a second.

Has PointBase Embedded been applied in the real world? Can you give us some success stories?

Both BEA and Sun bundle PointBase Embedded with their application servers to demonstrate their products. They, of course, need a fully functional DBMS of the highest quality. NetNumber has developed an ENUM system, which essentially maps IP addresses to cell phones. Their application performs many thousands of address translations per second using PointBase Embedded. Leadscope switched from Oracle to PointBase for their data mining software for the drug discovery industry, achieving performance and usability benefits.

At what stage in development should Java application teams consider PointBase Embedded?

Most architects like to make the choice early in the project.

How can our readers familiarize themselves with your product? Are there any sample/blueprint applications available?

Visit our site at www.pointbase.com. There you can read more about our products and download evaluation versions with sample applications.

If you had one message to send to the Java community that sums up why PointBase Embedded is invaluable for Java applications, what would that be?

If you are programming in Java, PointBase should be your database. To achieve all the benefits available through implementing in Java, use a Java database. ■

**The Standish Group CHAOS Chronicles, 2000. www.standishgroup.com*

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Open source has gained broad acceptance among enterprises as a reliable source of infrastructure software. The Linux operating system and the Apache Web server are only two examples of open source technologies that are depended upon to power the world's mission-critical servers and websites. Even as open source continues to proliferate up the technology stack, it remains difficult to make the most of what open source has to offer.

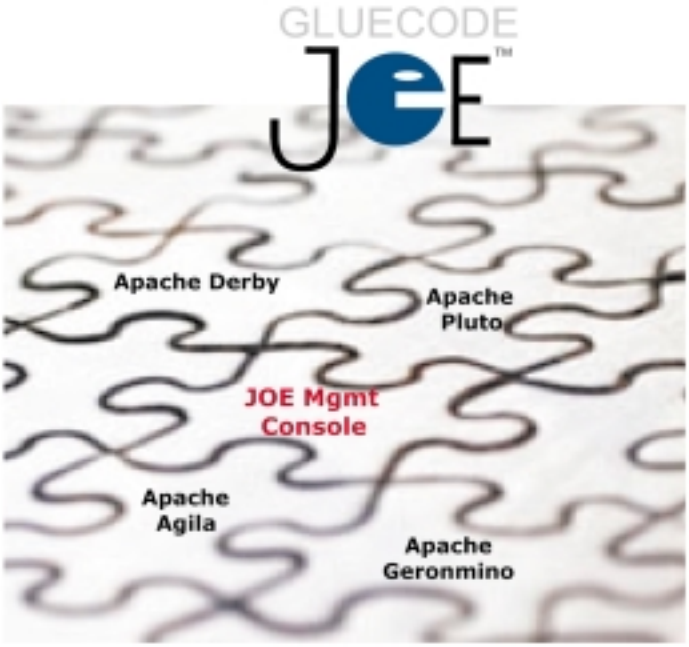
Developers face an overwhelming choice, since there are literally thousands of open source projects to choose from. How do you begin to choose the right open source projects for your needs? How do you integrate and maintain the code from disparate projects and track their interdependencies over time? And how can you ensure that you'll have the technical support you need as you develop and deploy your applications?

With Gluecode JOE™, the pieces of the open source puzzle have been assembled for you, so that you can focus on what you do best-building your application.

Gluecode JOE is an integrated, Java-certified application platform built on proven open source technologies from the Apache Software Foundation. It provides a rapidly deployable, production-ready base from which to build mainstream Java applications. We keep it simple and accessible, with an integrated feature set that strips away the complexity of most Java platforms. And since it's open source, it's inherently open, extensible and affordable.

Key Benefits

Integrated - Gluecode JOE ships out-of-the-box with an Apache-based open source stack comprised of an application server, JSP and servlet container, business process management services, database and JSR 168 portlet container. The management console provides centralized configuration and management of all components.



Certified - All key components of Gluecode JOE are rigorously tested to work together. You can build your application with the peace of mind that the platform you are using is Java-certified.

Supported - Gluecode JOE benefits from continuous maintenance and innovation from Gluecode Software, so that you can be sure that you're keeping up with software updates, new standards and new features. Subscribers can choose from a range of support options to meet their needs and gain access to value-added features and pre-built applications for the Gluecode JOE platform.

Common licensing - The core infrastructure behind Gluecode JOE is Apache-licensed, with one of the most business-friendly licensing terms around. You're free to extend, enhance and modify the code to meet your specific requirements, without conflicts over IP.

GLUECODE SOFTWARE

www.gluecode.com

Contact us at
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or call 310-536-8355.

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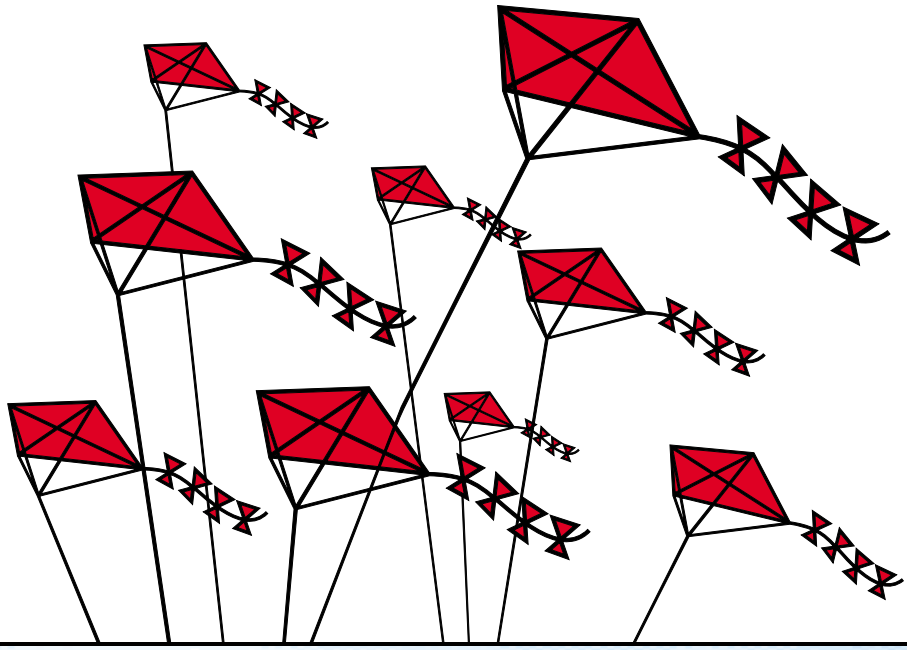

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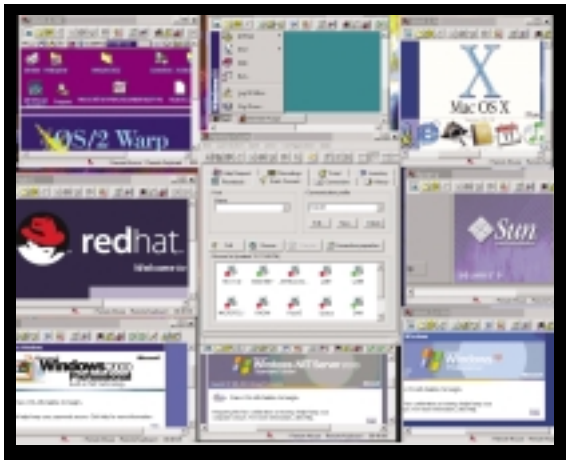

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NetOp Remote Control Enables Building Automation

Imagine sitting at a computer and controlling the physical operations of a building that's located miles away. Like something out of a James Bond movie, you could unlock/lock and open/close doors, adjust the temperature in the building, control the building's security, and even adjust air pressure in the building; all at the push of button. Control Installations of Iowa (CI³) does just that. By engineering a graphical user interface based off a building's blueprints, employees at CI³ monitor and control their client's buildings on a daily basis.

To do this, CI³ uses NetOp Remote Control for immediate resolutions to their clients support calls. "Before NetOp we could only handle 2 to 3 service calls a day. With NetOp, we can handle 12 to 15 calls a day. We actually get less repeat calls because the issues get resolved immediately", Brian Aller, operations manager for CI³, explains.

With NetOp, CI³ can easily reach any Windows, Mac OS X, Linux, Sun Solaris, CE device or legacy OS/2 and DOS PC from a desktop, Pocket PC, Internet Browser, or even a USB Flash Drive, to take control of their customers' buildings. Whether an emergency or a simple adjustment, NetOp enables Aller to resolve issues immediately from the comfort of his office. "One of our customers has an inflated building; an air filled football dome," Aller continues. "They called us once when a tornado was approaching the building. With NetOp, we were able to increase the air pressure in the dome to prevent it from collapsing due to the tornado."

For CI³, security is a very important issue when remotely controlling their customers' building automations. "Most of our customers are security oriented. So, it's a major issue to them when they allow us to remotely access their machines", Aller says. "We've had great response from IT departments to NetOp's ability to change the port number, extensive password protection, and encryption. It's passed almost every IT department we've dealt with."

By using NetOp to remotely troubleshoot and assist their clients, CI³ has been able to save a substantial amount of money. "NetOp's made a sizeable impact on us financially", Aller explains. "When you're talking service calls being upwards of $100 an hour for a technician and reducing those calls from three hours to a half an hour, that's several hundred dollars saved on every call."

"NetOp has cut my programming time down. It's eliminated my travel for late service calls, that used to be middle of the night nightmares", Eric Strader, senior software specialist at CI³, explains. "Now it takes me 15 minutes. I wake up, go to my computer, connect to the site, fix whatever may be wrong or diagnose it and go back to bed."

Thanks to NetOp, CI³ increased their number of calls resolved per day, decreased the amount of time spent on each call, saved thousands of dollars in travel expenses, and increased the number of clients they can serve. "NetOp is a fabulous product that works well with cross platforms. We would highly recommend it for service and support use", Aller states.

For more information on NetOp or to download a free evaluation copy, please visit:
http://www.CrossTecCorp.com

> INTERNATIONAL BUSINESS

Globalizing an Enterprise Content Architecture

by Donald A. DePalma

"E" can mean something other than English

»Rushed to deployment under the mantra of "now or never" in the late 1990s, many corporate Web sites have received major makeovers in the last few years. The driving force behind these efforts has been the increased use of the Web to create an active channel of communication with consumers, corporate buyers, resellers, shareholders, and employees. As they integrate these external Web sites with corporate systems managing customer relationships or supply chains, corporate planners envision their corporate URLs as the first point of contact in a lifelong, online journey with a customer or business partner.

This vision makes a lot of sense. Given the reach of the Web and the potential for creating powerful interactions, it will work at most companies – until it reaches the borders of the United States or encounters someone wanting to speak a language other than English. In continuing research into the online practices of large businesses, Common Sense Advisory has found that 40% of the U.S.'s biggest companies address visitors to their corporate Web sites in English only. American companies are not alone in this monolingual approach – in a survey of 400 companies worldwide (the 25 largest firms in each of 16 markets), more than three-quarters offered content only in the official language of their corporate headquarters.

Given the hothouse growth of China, the continuing expansion of the European Union, and growing reliance on developing countries as outsourcing hubs, more people speaking other languages from more countries will show up at corporate Web sites. Will these online portals and the enterprise systems they connect to serve up anything other than English gibberish to these foreign visitors? This article discusses the globalization of corporate systems that should accompany any remodeling of any externally facing enterprise architecture. To succeed in serving and satisfying international customers and partners, companies must offer them something that they can understand. This will mean adapting Web sites, products, and services to their needs.

Gone Are the Days of Online Corporate Brochures

In the early days of the commercial Internet, companies would simply place product brochures on their Web sites and sometimes update them when specifications and prices changed. But this old "brochureware" approach soon yielded to online businesses such as Lands' End, Dell, and now Nissan that configure goods to a buyer's needs and desires. Information-only Web sites morphed into transactional tours de force that allowed customers to buy goods and services 24 hours a day.

As e-business has become just plain business at many companies, the supporting infrastructure has become as intricate and distributed as other channels. Various internal workflows and systems make this content available to visitors, customers, employees, business partners, and even governmental overseers – both on the Web and through catalogs, stores, customer service representatives, and other channels.

Many companies have great intentions when it comes to offering products and services to other markets, but cannot keep their disparate global sites synchronized with consistent, current information. Globalizing content architecture involves looking at processes (and sometimes the lack of processes) for getting information from, let's say, the U.S. to China and from English to Chinese. Quality, cost, and timeliness underlie the basic issues that companies will face as they take their online business and their supporting information systems into international markets.

Globalization Begins Deep in Enterprise Systems

The most revisited discussion in globalization is whether to centralize efforts around the corporate site or let country units manage their own markets' sites. One of the likely outcomes from the review of how a company manages data, documents, and other content will be that it should centralize the technology investment, focusing on the creation of the most reliable platform for its business applications, whether online or offline. Content, on the other hand, will come from around the company and from

throughout the supply chain.

Effective globalization begins at the core of the enterprise and proceeds outward to all externally facing systems. In their review of online architectures and the systems that support them, planners aim for easier integration with other corporate systems, greater flexibility in adding new features, and the ability to respond dynamically to visitor requests. They will bring the Web under the umbrella of corporate reliability, availability, and scalability (RAS) standards as they integrate their Internet investments with other channels of corporate communication and commerce. What will be missing in many plans is an active, systematic plan to adapt these systems to support any market on the planet.

This will not be a simple task – besides a lack of awareness of international market issues, this complexity probably explains why many companies don't look too far beyond their home markets. They find that the layered, multiplexed complexity of system architectures – Web, legacy systems, client/server, desktops, Web services, and the alphabet soup of underlying technologies – stands in the way of simply translating the screens that show up in browser windows. In such corporate systems, well-defined browser interfaces suddenly explode with SQL and transaction processing messages, turning a well-crafted French UI into a mish-mash of English variable names and errors.

As data journeys upward through these technology stacks from DB2 to Internet Explorer, various systems accrete layers of messages, metadata, and potential errors. Thus, efforts to globalize enterprise systems must start at the very heart of corporate systems and work their way up to the surface. Done right, they will ensure support for any human language and markets that future applications throw at it. This initiative will involve low-level technical remediation plus the work of translators and market specialists:

- *Internationalization* enables the use of different character sets, currencies, date formats, and other language- and market-specific details. Supporting other alphabets may be easy with software that was Unicode enabled by its supplier, but getting the data in and out via less internationally minded development tools and business intelligence tools might be an issue.
- *Localization* refers to the process of adapting, "culturizing," and legalizing products, services, support materials, documentation, Web sites, and infrastructure to the requirements of other markets. Localization requires internationalization and usually implies translation.
- *Translation* describes the process of taking information from one language and conveying the same thoughts and details in another language.

Companies need to do some heavy lifting just to enable clear communication and commerce with the audiences they need to reach. Once the systems have been internationalized and interactions localized, then they can start thinking about what they need to tell visitors – and how to tell them in the most effective way (see Table 1).

Translate Only What Matters

What exactly are people looking for when they visit a corporation's international site? Successful companies have found that thoroughly localizing complex Web sites hosting enormous amounts of content and interactivity is very difficult. This realization has led them to limit the content to a nucleus of essential facts called the "content catalog." Because they know exactly what needs to be translated, global planners can accurately estimate the cost of setting up and managing a national site.

A company taking this approach will typically specify several tiers of content, such as: 1) the basic information that a firm wants to post about itself and its offerings in an international market; 2) more detailed product and support information for countries where its presence is more evolved; 3) comprehensive data supporting a strong in-country presence; and 4) an international site equivalent to the U.S. presence in most, if not all, respects.

Branding continuity and consistency drives this tiered approach. To ensure consistency across business units and among individuals, companies often create style guides and glossaries. A style guide describes the company's general manner of expression and specifies corporate conventions for grammar, punctuation, and word usage. Very large companies such as GE or Siemens that have many different business units will generate not only corporate guides but business-unit guides as well. To be most effective, style guides and glossaries need to be available in both the source and target languages.

Finally, when developing a content catalog and corporate style guide, companies should clean up their source content, but the reality is that many don't. Eliminating repetitive text, verbosity, multiple synonyms, and market-

Action	Corporate Benefit	International Benefit
Standardize platforms	• Stable platforms • Easier integration • Economies of scale in purchase, training, and management	• Consistency in look and feel • Common functions across markets • Leverage centralized investment
Limit tools	• Lower software licensing fees • Less training • XML consistency • Easier application integration	• Decreased file format conversions • Lower costs • Less time to translate • XML-based information sharing
Use document templates	• Consistent format and structure • Easier information sharing with partners and supply chain • Easier sharing with other information applications	• Less conversion headache • Easier translation of supply chain data and information
Document and workflows	• Well-defined roles and processes responsibilities • Better able to gauge the impact of changes to content and data	• Lower cost • Decrease elapsed time of projects
Guide authors and translators	• More consistent source documents • Less subjective creations	• More consistency in branding and international presence • Better translations

Table 1: Benefits of globalizing a content architecture

specific graphics will save on translation costs and eliminate confusion. Analysis of existing processes for managing content will uncover not only chaos, but also lots of ugly content. Specialists characterize much of the documentation, online help, contracts, e-mail communications, and other free-form data that flows through companies as verbose, ambiguous, too idiomatic, buzzwordy, repetitious, turgid, inaccurate, expired, and country-specific. Such information not only takes up more storage space than it should, but it increases costs by confusing, misdirecting, and misleading readers.

Technology Meets Translation

During the dot.com boom, anxious companies used whatever tools let them build sites fast, but often with little concern about future enhancements, integration with other systems, access by other tools, or standardized formats. While doing routine software audits, some IT departments have discovered that their developers have been using 30 different content creation tools to manage content. This technology smorgasbord incurs heavy costs in training, software acquisition, time to market, and translation; and for each localization project, the source content must be converted into a form that a translator can edit and then converted back to the original file form before it can be posted.

If companies expect to keep their international presence and brand consistent, they must end this costly, time-consuming cycle. Over the last few years, many of the early Web tool companies have adopted open standards such as XML, Java, and Web services, all of which address the problems of integration and standard interfaces. This drive toward fewer differences between the output of tools, Web services, and more centralized development and management of core technology will make translation and market adaptation more cost-effective with a globally compatible, internationalized platform.

Further, a company's software platform should be able to support critical cross-border functions such as dynamic content generation, customer relationship management (CRM), and supply chain management (SCM) using the same backbone technology. Otherwise, it will be doomed to reinvent the same technology wheel for every country it enters.

Look at Machine Translation

Computer-generated translation – often called machine translation (MT) – figures prominently in science fiction and military intelligence, especially in today's post-9/11 world. Simply stated, a computer translates text from one language into another at lightening-fast speeds. Depending on the power of its software, its ability to learn, and the use of specialized dictionaries, computer-generated translation has approached high levels of accuracy – better than simply "gisting" the sense of the original, but nowhere near the level of an accomplished or even pedestrian human translators.

Although machine translation is not ready to create compelling sales pitches or translate best-selling novels, it can perform several important supporting roles as companies move into markets. These useful functions range from translating materials that otherwise will never get translated down to helping multinational development teams communicate. Expect this technology to improve over the coming decade as linguistic technology improves and as more potent computers provide the platform at lower prices.

Overview and Key Recommendations

Translation is not something that should occur in isolation. Companies will benefit both on the corporate side and in international markets from a methodical review of how content is created, managed, presented, and kept current.

Organizations looking to take their online presence and supporting information systems into international markets should undertake the following three tasks:

- ***Announce that quality translation is not an option.*** Even though many potential customers and partners may speak the same language, many do not. By not offering them the choice of interacting in their language, a company is put into a net deficit position relative to the potential customer or partner's needs. Creating a core content catalog for the company and using it as the vehicle to enter new markets will bound both the cost and required resources.
- ***Revisit content architecture.*** The rapid development of corporate Web sites in the mid-to-late 1990s resulted in unstable software, cobbled-together work flows, and too many tools and file formats. Newer, more stable technology, key standards, and a better understanding of how distributed authoring works are a few of the benefits that will result from a systematic review of a company's online business.
- ***Insert globalization into the heart of its business.*** As companies build out their global business, they should include translation as an early step in product development. Support it through mainstream content management, good translators, documented processes, feedback, monitoring, and the automated business rules in global resource servers to keep international sites provisioned with only correct, current, and consistent information.

> "Companies need to remember that the U.S. is just one country with its own language and business practices."

Companies need to remember that the U.S. is just one country with its own language and business practices. Once they've sated the American market, the next step for them is to take their offerings global. That means enabling core systems to extend beyond North America. Only then will the "E" in ERP, EAI, and ETL stand for something other than English. ■

About the Author

Donald A. DePalma, Ph.D., is the author of Business Without Borders: A Strategic Guide to Global Marketing*, and the president and founder of business globalization research and consulting firm, Common Sense Advisory. For more information on Common Sense Advisory's research, workshops, and consulting services, visit www.commonsenseadvisory or call 866.510.6101. don@commonsenseadvisory.com.*

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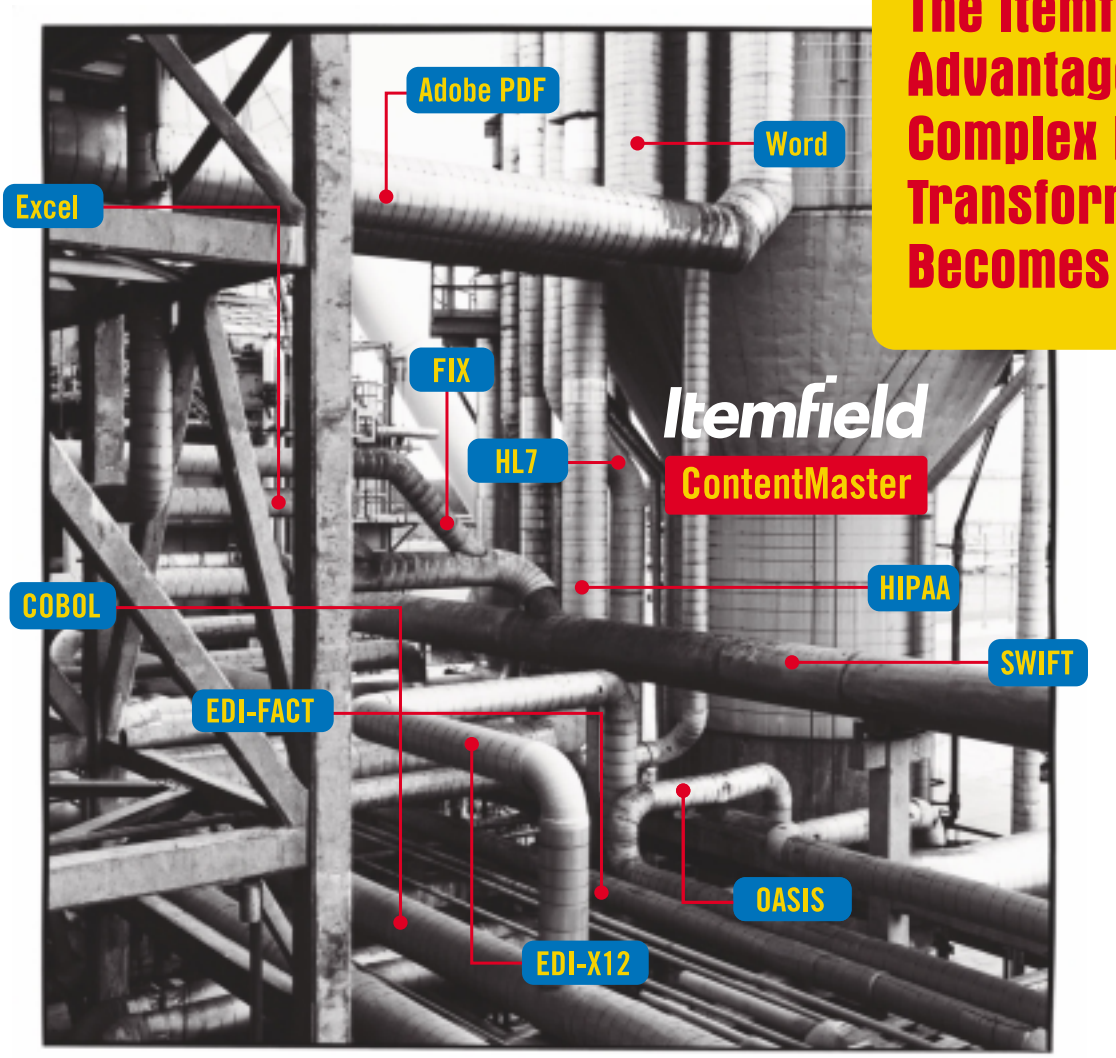

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> INFORMATION SECURITY

For Corporate Executives and Directors...

by Troy Smith

A new approach to information technology security

»Understanding the potential benefits and risks of information technology (IT) – particularly information security – has become a mission-critical imperative for today's business leaders. Cyber-attacks, computer abuse, privacy issues, identity theft, and fraud have not only raised the level of corporate awareness, but also ushered in a new wave of regulatory requirements. Cyber-threats and new regulations can both lead to serious consequences for the company and its leadership.

Company executives need to recognize that threats are not simply a technology issue, but have become a serious concern for the enterprise. Addressing information risk and security at an enterprise level requires an approach that cuts across people, processes, and technology. Many companies have invested heavily in security technology solutions, but have not made similar levels of investment in the supporting processes and human resources. Of course, technology is a critical element of an effective security program, but it is not a panacea, as several high-profile breaches have shown.

On August 11, 2003, for example, the "Blaster" computer virus invaded Microsoft, flooding its product support Web site with millions of requests for software updates. The virus created havoc on the Internet, eventually costing businesses and governments upwards of $10 billion. Although serious, an external cyber-attack is only one type of threat – just as critical are internal breaches affecting the confidentiality and integrity of information.

Corporate executives need to take a much more supportive role in IT security to enable the protection of their networks and data. Information risk and security needs to be defined within the organization as a critical function in order to make optimal investments to protect the critical assets.

Sarbanes-Oxley and Other IT Security Wake-Up Calls

Traditionally, information risk and security issues have been relegated to the IT department, but this scenario is changing for a number of reasons. Companies have developed a significant operational dependency upon the use of IT and networks, and to some extent this has raised the level of organizational awareness. The business disruptions caused by external threats – such as malicious code and viruses – have also elevated the issue of managing information risks. Identity theft is one of the fastest growing areas of cyber-crime and many companies – particularly e-commerce firms – are extremely concerned. California law SB1386, a consumer privacy protection act, mandates that companies publicly post any potential breaches of consumer identity or privacy.

A recent survey sponsored by BNX Systems and Institutional Investor found that 25% of CIOs plan to implement identity management software this year. In another survey, the top IT security–related concerns were preventing the identify theft of customers and preserving intellectual property (IP).

One of the most compelling reasons for executive-level attention to information risk is the 2002 enactment of the Sarbanes-Oxley legislation. Section 404 of Sarbanes-Oxley mandates that public company CEOs and CFOs personally vouch for a company's internal control structure, and that board members monitor this process.

One of the primary internal controls of any company is IT security, and companies are making heavy investments in projects related to security controls for compliance with Sarbanes-Oxley. Under Sarbanes-Oxley, executives and board members who knowingly approve nonexistent or ineffective internal controls may face significant penalties, including criminal prosecution. Given these consequences, it is not surprising that the law is driving tremendous interest among management teams and boards of directors in formulating a more comprehensive, organization-wide approach to IT security.

Companies are primarily guarding against worst-case scenarios: a debilitating cyber-attack, noncompliance with Sarbanes-Oxley or other regulations, customer litigation over identify theft, and theft of intellectual property. However, there are positive consequences as well: by conducting risk assessments aligned to the core business processes, companies are also able to develop a business case for investing in information security.

Step 1: Remove IT Security from the IT "Silo"

It was Charles De Gaulle who once said, "I have come to the conclusion that politics is too serious a matter to be left to politicians." In much the same sense, the first step towards an enterprise-wide approach to managing information risk and security is to elevate it beyond the IT department. As a respected member of the executive management team, the chief information officer (CIO) needs to carry the message across the organization.

In general, IT organizations do a reasonably effective job of protecting their infrastructure and information technology assets, but may not be fully aligned with the company's business community. Often, the IT department is asked to manage initiatives that require the support, involvement, or sponsorship of the business, but does not get the business commitment needed to succeed. For example, Role Based Access Control (RBAC) can be a very effective tool for protecting information assets from both internal and external threats. There are certainly technology aspects to implementing RBAC, but to fully achieve the goals the business must be involved. Defining the user roles and making decisions about which systems individuals will be allowed to access is a dangerous role for IT to assume.

To be effective, today's CIO must be a good communicator and advisor, providing informa-

tion risk and security knowledge to the other executives throughout the organization. In addition to the primary role of providing cost-effective, reliable information services, the CIO needs to also provide advice and the business case for protecting the critical information assets.

Not only will risks be far better understood when IT security is emphasized at the higher levels of the organization, but better investment decisions can be made. For example, spending on big IT projects (including IT security) is finally on the upswing among Fortune 1000 companies. In the past, many large IT projects did not achieve the benefits promised at the start of the project. When strong trusted-advisor relationships are forged between the CIO and the business executives, this is much less likely to occur.

Step 2: Develop an Understanding of the Risk Landscape

Effective IT security is difficult to achieve without first understanding the threats to the information environment and the associated risks. Often, companies make inaccurate assumptions about the threats and risk impacts or do not align them to the critical business processes. For example, software companies, during a busy season, often hire fleets of part-time programmers to write software code on-site at the company. This can create a variety of new risks for the company, but without a thorough risk assessment and analysis process the potential risks may be missed until an incident actually occurs.

An information risk assessment process needs to be integrated into the overall business strategy, and conducted in a continuous and validated manner. When properly designed, the risk assessment process can be performed quickly with a minimum of disruption to the organization. IT risk workshops can be an excellent tool for initializing a comprehensive risk assessment process, and can help develop awareness and buy-in for the process. The overall information risk assessment process needs to provide useful, relevant information and take the organization beyond a "check-box" mentality.

Another concept that has started to gain traction is the regular participation of IT leadership at the board-of-director level. With the members acutely aware of their Sarbanes-Oxley–related liabilities, there is no better time to propose this idea. If the board understands information risk and the company's ability to handle it, then better decisions can be made. For example, many companies defer investments in emerging technologies because they do not understand the risks or how to manage them.

The accounting scandals of 2001 and 2002 ultimately led to the creation of new regulations that required more accounting representation on boards, specifically for audit committee members. Hopefully, it won't take a debilitating IT security disaster to convince more companies that IT knowledge on the board is as crucial as financial or business knowledge.

Step 3: Integrate IT Security with Business Continuity Planning

Most companies today have a business continuity plan, but few have incorporated an information risk and security strategy within it. Given the business dependency that most companies have on information technology, it is nearly impossible to have effective business continuity capabilities without an equally effective IT security framework.

Clearly, e-commerce businesses and financial services firms have the most significant need to align security and continuity. But companies across all industry sectors have similar issues to varying degrees. For example, the supply chain is a critical business process in most manufacturing companies, and nearly all modern supply chain processes are highly dependent on software and networks to function. If the main supply chain information systems were compromised due to a cyber-attack, the ability to manage the flow of goods and services would be severely hampered. A well-publicized example occurred in 2002 at a major rail transportation company, when a computer virus shut down the central control center. This left the company in a position of very high risk exposure with no way to track the location of their trains, combined with the shut-down of crossing signals in 23 states.

Technology risks affect other areas as well. For instance, much of the physical plant today is highly dependent on technology to operate, e.g., HVAC, elevator service, water controls, automated door access systems, and fire alarms and sprinklers. In the event of a technology failure these types of process and safety systems might not function, unless they were included in the overall business continuity plan.

Step 4: Periodic Assessments for Vulnerabilities

Given the ever-increasing threat environment, the expanding role of networks and technology, it is imperative that the company continuously perform vulnerability assessments. Such assessments should not be limited to network or system vulnerabilities to external attacks, but should also cover weaknesses in the processes, policies, and internal access.

Business changes occur for a number of reasons – e.g., mergers, acquisitions, new customers, regulations – and the information risk and security posture needs to be reassessed in line with the changes. For example, employee access rights to systems need to be monitored and changed if business needs require it. If an employee is terminated, his/her access to systems should be turned off immediately.

A recent example points out the importance of managing this process. A terminated employee planted a logic bomb in the main computer, which, after he left, deleted 10 billion files. This incident was the result of vulnerability within the internal access policies and processes.

In other cases, companies have found that lapses in external network security have allowed their proprietary product information to wind up in the hands of foreign manufacturers who are illegally producing their product. In one instance, a not-for-profit institution did a vulnerability assessment and found that hackers were using its servers as a platform-base to attack other companies. Regular assessments of security across people, processes, and technology will detect these types of incidents, and if done properly reduce the number of incidents in the future.

Conclusion

By adopting an organizational view of information risk, companies can begin to design an improved information security architecture that encompasses policies, technologies, and people. Senior management awareness and support of the information technology security function needs to become a reality, if the appropriate investments are to be made for protecting the critical information assets.

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› HARDWARE BENEFITS

Utility Computing

Three key building blocks

by Mark Bregman

» Utility computing (UC) is a concept in which storage hardware resources are pooled within a shared infrastructure of storage management and made available as needed in a pay-as-you-go model. Ultimately, the end goal that UC promises is to help companies more efficiently manage the resources they currently have while holding down costs. To get there, and operate as a utility, IT needs three key building blocks – availability, performance, and automation – that apply across storage, servers and applications.

Before looking at the three key building blocks to UC in depth, it is best to look at why enterprises need UC. Basically, IT executives are caught between two conflicting demands. The user community is demanding more applications to automate their business, and more data to make better decisions, and they all want it now. Pulling on the IT executive's other ear are the CEO and CFO who are demanding that the CIO spend less on data centers, less on hardware, and less on people – while providing flawless service with fewer complaints from the user community. One last caveat: this must all be done with the existing technology in which the company has already made a major investment – a complex and heterogeneous environment of Web servers, application servers, databases, and hardware from a variety of vendors. This is a great example of why many enterprises are looking to heterogeneous software vendors for a UC strategy, as opposed to vendors who want to "rip and replace" the enterprise's current hardware to implement their UC solution.

The Three Key Building Blocks

Availability

The first requirement of utility computing is that data and applications must always be available. Users should be insulated from disruptive events ranging from server failure to a complete site outage. And despite the fact that eliminating downtime is an industry preoccupation, "always-on" computing remains a challenge. According to IDC, when disaster strikes enterprises on average can expect to experience 3–7 days of downtime per event. Falling hardware costs have made it possible for many companies to protect data with layers of redundancy, but that redundancy makes some IT structures more difficult to access.

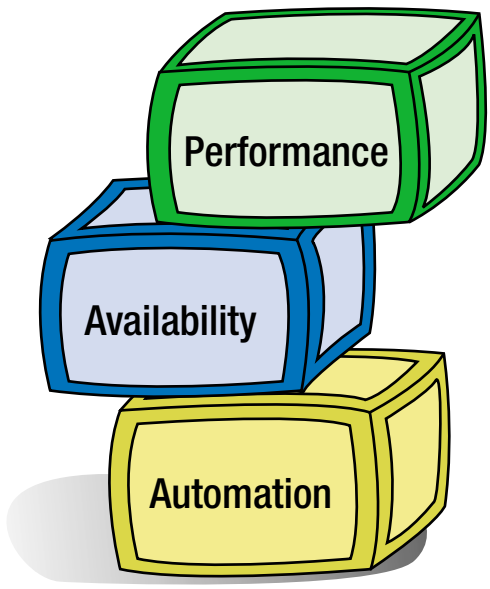
For IT managers to take availability to maximum levels, they must first make sure that all enterprise data is backed up. The data in branch offices, remote offices, home offices, desktops, and laptops is unquestionably valuable, but because of costs and logistical problems it is usually not backed up. The utility computing model calls for centralized, automated, cost-effective backup of these resources.

How is data backed up and recovered? Data volumes mirrored at one or more remote sites can now be reliably replicated over IP networks to reduce the amount of data exposed to loss and to speed disaster recovery. Automated server provisioning eliminates error-prone manual recovery techniques. Clustering optimizes availability by automatically detecting application and database performance bottlenecks, or server failure by moving these critical services to other servers within the cluster. Failover should include not only the data application, but also the application state, reducing the effects of a failure to ensure minimal impact to end users and the business.

Under the heading of data availability the utility computing model includes virtualization and pooling of storage resources, which enables IT departments to drive up storage utilization rates and reduce costs. Storage virtualization also reduces administrative costs by providing centralized control of heterogeneous resources from a single GUI. Effective data life cycle management further reduces the costs of data availability by automatically migrating data to the most cost-effective storage medium and allowing enterprises to access it selectively for regulatory compliance.

Performance

Utility computing includes the ability to scale compute resources to the needs of the



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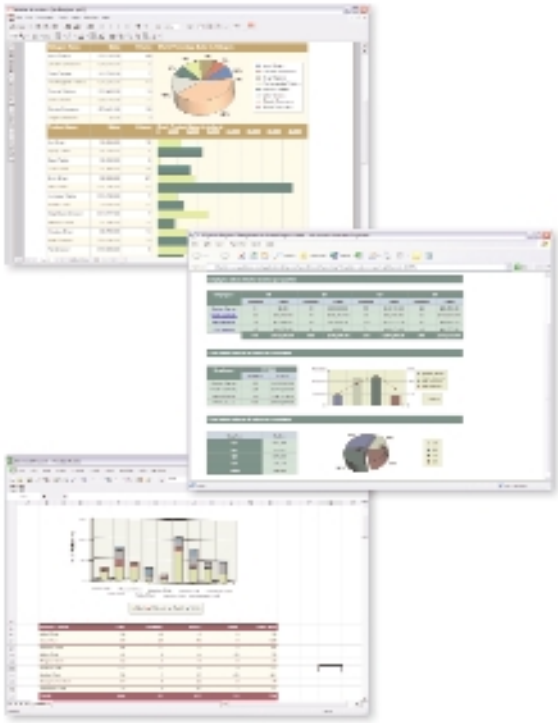

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business, optimize end-user response times, improve the overall quality of service, and detect and remedy causes of performance degradation, all in real time.

This requires tools that can instrument the entire application stack, from the Web browser or client application to the storage device, even in complex heterogeneous environments. If end-user response times are lagging, IT staff can break them down tier-by-tier to pinpoint problems. IT staff should utilize a dashboard-type client to send alerts and reports, giving them early warning of developing problems along with pointers to appropriate remedial action. Or if a database is running too slowly, storage management and storage networks can accelerate access to data to make it run faster.

As networks, applications, and data continue to grow, performance optimization tools will become more significant and valuable to IT departments. Many vendors are promising 99.9% performance, but there is a huge difference between performance and availability. An easy analogy is a water hose. If water is dripping out of the hose, the water is available, but not performing to full capacity. Many vendors promote availability as performance. It is necessary to ensure that the enterprise has both availability and performance.

Automation

With the continuous commoditization and decline in hardware costs, people are more than ever the greatest expense in any IT department. Handling routine tasks in today's evolving heterogeneous environments is a costly, unnecessary hassle. Automating processes releases IT from routine tasks to focus on more strategic activity and application development. Automation should enable IT resources to adjust to changing needs without operator intervention.

But automation does more than free up costly staff members for more productive work; it also speeds up processes to improve availability, ensures that things are done right the first time, and saves costs through more effective management of resources. Here are several examples of what automation technology can do to bring the enterprise closer to the utility computing model:

- ***Virtualization and pooling of storage devices:*** Driving up storage utilization and reducing hardware costs.
- ***Simplification of storage management:*** Automating of common tasks from simple graphical interfaces.
- ***Virtualization and pooling of compute capacity.*** Server utilization is notoriously low – at best, 20% – and applications vary over time in their need for processing. Drawing processing resources from a pool of servers drives up server utilization to align the needs of the business.
- ***Provisioning a second server anywhere in the world when a server, an operating system, or an application fails:*** Automated migration of the application makes the failover practically unnoticeable to users.

> "As networks, applications and data continue to grow, performance optimization tools will become more significant and valuable to IT departments."

Attaining Utility Computing

The key question for many companies is, how do we get from where we are today to the utility computing model? How do we put the focus areas of availability, performance, and automation in place? There are five basic steps to consider:

1. ***Discover.*** Inventory your IT assets and their utilization. This may sound fundamental, but many IT departments lack a single, straightforward inventory of storage, server, and application resources with utilization estimates. This is essential for the steps that follow.
2. ***Consolidate.*** Once you have a clear picture of the organization's assets, you can begin to architect the environment to create enhanced availability. The first goal is to build a storage utility with software that allows you to virtualize and consolidate resources to improve administrator productivity and storage utilization. Consolidating processing resources will drive up server utilization in the same way.
3. ***Standardize.*** Classify your applications, and then standardize on a set of integrated software tools and on a reasonable number of storage platforms each providing different qualities of storage service.
4. ***Automate.*** Now you can start to drive down the amount of time and labor required to request, provision, and manage the environment with automation – the third area of focus. Effective automation drives down cost, improves service levels by reducing intervention, and makes interaction with IT resources a more predictable experience.
5. ***Allocate costs.*** Finally, move to a utility computing, service-provider model by accurately reporting the costs of service level delivery. The costs may be allocated or charged back to business units on a usage basis.

As these steps are taken, IT moves closer to the utility computing requisites: data and applications that are always available, performance that is maintained at specified levels, and IT management that is highly automated to reduce costs. Efficiency rises, and hardware and administrative costs drop. Ultimately, allocating costs helps align IT with business operations. These are achievable benefits that are being enjoyed today by progressive enterprises. ■

About the Author

As CTO of VERITAS Software Mark Bregman is responsible for driving the company's technical and market strategy to further extend its vision for utility computing. In particular, he will be responsible for cross-product integration, advanced product development, merger and acquisition strategy, and the company's engineering development centers in Pune, India, and Beijing, China. Mark is also the acting manager of the company's Application and Service Management group, with responsibility for the CommandCentral Service and Application Performance Management products.

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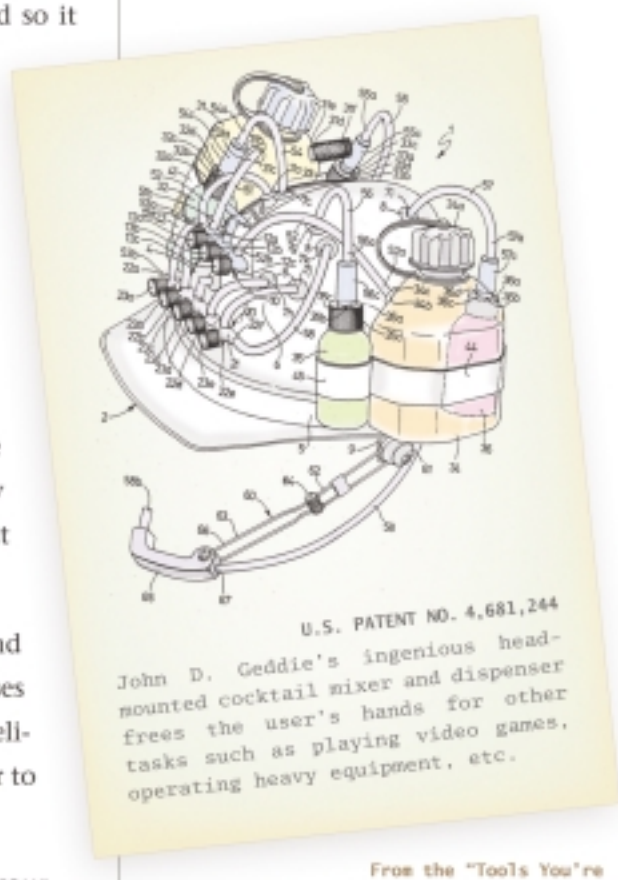

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Enerjy Software: Why Coding Standards?

It's a fact of life: different developers like to write code in different styles. Show me code written by 10 different developers, and I will show you 10 different coding styles. So why try to develop and enforce coding standards? There are two core reasons:

1. ***Comprehension of Other's Code.*** Adopting a set of coding standards makes it easier for developers to read and understand each other's code. Although peer review is not the norm in every development shop, almost everyone has to maintain—or, at least, step through—code written by someone else.
2. ***Pre-empt bugs.*** Adopting coding standards also serves to pre-empt bugs. Everyone knows that the cost of fixing a bug rises exponentially over time. Finding and fixing bugs in the development phase—and preferably even prior to unit testing—can save hours of time and resources later. Certain coding standards can make it less likely that bugs will be introduced into the code, and if those standards can be applied as the code is written, the savings will be huge.

Code Analysis Tools

Many well-meaning people have adopted the idea of coding standards, only to have them fall into disuse. The problem is that you have to be very self-disciplined to remember to apply all of the standards while you are writing code. You have to learn and memorize them all (Sun's coding standards are very concise, but they still run to 20 pages), and then remember to apply them all the time.

Code analysis tools, such as Enerjy Code Analyzer, give developers an easy way to check their code against a set of standards as it is being written. This is a significant step forward in promoting the adoption of standards, since it makes it easy for developers to police themselves and reduce the mundane so they can move on to the more challenging coding aspects of their application.

Working something like a grammar checker in a word processor, Enerjy Code Analyzer applies a preconfigured set of rules to the code as the developer is writing it (in fact, it runs on each File, Save operation), and points out any violations of the coding rules. Moreover, for many of the rules–in particular, the more straightforward ones–Code Analyzer will even suggest and apply a fix for you.

Getting the Most from Your Code Analyzer

The key to a successful implementation of a tool like Enerjy Code Analyzer is in defining your rule set. This should be based on–and, ideally, should totally define–your own set of coding standards. Although Enerjy Code Analyzer ships with nearly 200 configurable rules built in, you can also add your own rules to encompass your organization's special standards by writing new Java classes and integrating them with the analysis and reporting engine.

The standard set of rules breaks down into a number of areas:

- Standards compliance
- Unused elements
- Common coding errors
- J2EE compliance

By default, Code Analyzer is triggered on each File, Save operation, which makes it virtually seamless as far as the developer is concerned.

After each analysis, Code Analyzer adds a report of any violations as warning messages in the IDE; clicking on a message will place the cursor on the offending line in the code, taking you right back to your curly braces and semicolons. For those rules that can be auto-fixed (e.g., missing braces), right-clicking on the message will allow the problem to be automatically fixed. Alternately, all auto-fixable problems can be fixed at one time.

Enerjy Code Analyzer includes extensive and enlightening built-in help via a tap of the F1 key – a learning tool for starting Java developers – or a handy reminder for more experienced developers.

Finally, the output from an analysis session can be saved to a report, in either HTML or XML format.

One final point: the easiest way to implement a set of standards is to quickly get to the point where your code generates zero errors, and then keep it that way. If you establish coding standards with every development project, you'll pre-empt pesky bugs, save time, and develop more reliable applications. ■

About the Author
Nigel Cheshire is the CEO of Enerjy Software.

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