FULL SPEED AHEAD

BY KAREN WATTERSON

IBM's Internet technology is rocketing out of its labs so fast it's hard to keep up. Here's a starting place for users who want to jump on board.

Without much fanfare or embarrassing about-faces, IBM has delivered solid–sometimes innovative–Internet products and services. In one key arena, e-business, IBM has established several important beachheads.

As you might expect, IBM has developed software that lets you use any of its hardware platforms as Web servers. What you may not know, however, is that most of it is free. You can download free IBM Internet Connection Servers for AIX, OS/2, Windows NT, Solaris, HP-UX and OS/390. An Internet Connection Server for the AS/400 is included with Version 3, Release 2.

If you're in charge of multiple Web servers and want to take advantage of the load balancing and management software used during Virtual Lotusphere '97, the Deep Blue vs. Gary Kasparov Chess Tournament, the 1995 and 1996 Wimbledon and U.S. Open Tennis Championships, and

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the 1996 Atlanta Summer Olympics (where NetWork Dispatcher handled a peak of 18 million hits in 24 hours without error), consider Interactive Network Dispatcher for AIX at only $1,500 per server.

IBM has also made it easy for RS/6000 customers to use the Netscape Communications Corp. FastTrack Server, thanks to an enhanced Internet PowerSolutions for AIX bundle that now includes Netscape's Directory, Catalog, Mail and News Servers as well as LiveWire Pro.

The free Internet Connection Servers aren't your only option, however. IBM subsidiary Lotus Development Corp. offers a multiplatform Domino 4.5 Web server that is probably better suited for high-end, interactive, workgroup-type applications. Domino can use DataBolt components (either in applet or ActiveX control format) and includes built-in broadcast functionality that works with Marimba's Java-based Castanet "push" technology, for example. In January, IBM announced a programmer-oriented server package based on technology acquired from the Taligent group: Visual Age WebRunner Server ($249). WebRunner Analyst and WebRunner Distributor versions are free from `http://www.taligent.com`

RS/6000 users are undoubtedly familiar with IBM's Secured Network Gateway, which runs under AIX, but may not know about IBM's new video servers. The IBM MediaStreamer, a hardware/software bundle designed to transmit analog and/or digital video for the broadcast media, includes an RS/6000 Model 39H or Model R20 server, Magstar tape drive and Tivoli Systems Inc.'s TME 10 NetView management software with prices starting at $129,000. IBM's software-only solution for enterprise delivery on-demand video is the new VideoCharger Server for AIX, which costs $11,995.

There's more. Isis, for example, is a new Java-based technology available from IBM's AlphaWorks research/experimental site (`http://www.alphaWorks.ibm.com`) that enables Webmasters to add a time element to the presentation of multimedia content. And AlphaWorks isn't the only place to find innovative technology from IBM, tools that in the past often languished in research labs.

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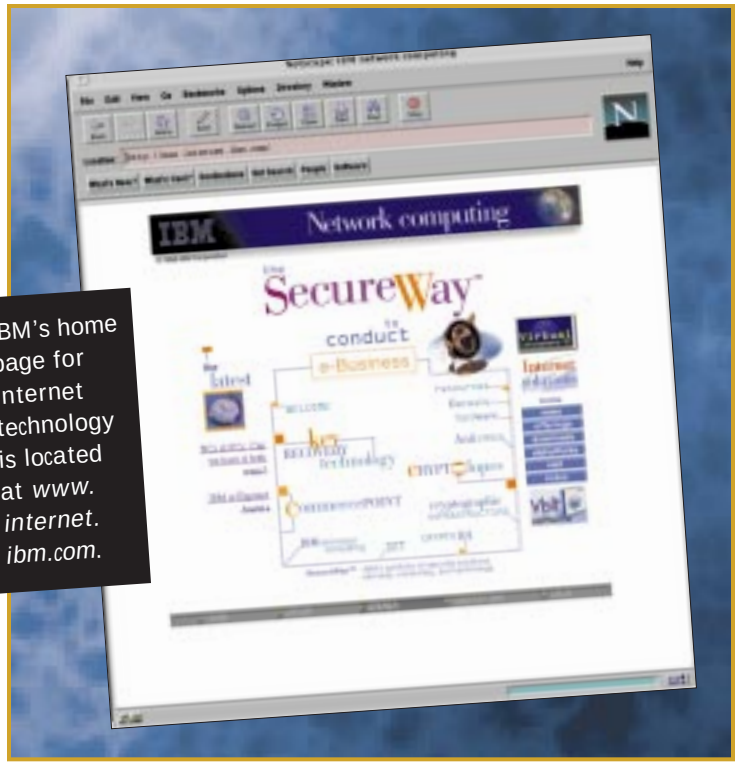
Multimedia gurus should also explore `http://www.software.ibm.com/data/mediaminer` for a collection of tools, including IBM's Query by Image Content (QBIC), ImageMiner, TextMiner and related text search and retrieval components. The current MediaMiner site postings support text and image only, but audio and video are under development. MediaMiner also provides a link to another experimental product, Web Browser Intelligence (WBI, pronounced "webbie"), available from the AlphaWorks site. WBI acts like an intelligent browser buddy, graphically alerting users about unusually slow link speeds, noticing patterns, suggesting shortcuts and so on.

IBM's Digital Library is a high-end asset management solution that creates and stores digital copies of multimedia content, including photos, art and/or audio and video clips for distribution over intranets or the Internet. Digital Library uses IBM's relational database management system, DB2, for data storage and retrieval. The FDR New Deal Network Web site at `http://newdeal.marist.edu` is an excellent example of Digital Library at work.



IBM's home page for Internet technology is located at *www.internet.ibm.com*.

Databases

DB2 is not just a big, expensive, complicated program that runs on a mainframe–today's DB2 runs under AIX, on the AS/400, under HP-UX, Solaris, OS/2 and even Windows NT. IBM provides access to DB2 via its free Net.Data (formerly known as DB2 WWW Connection). Starting with DB2 2.1.2, IBM includes JDBC as part of DB2 Client Support.

But IBM has other database systems: the high-end, hierarchical OLTP IMS system, Lotus Notes/Domino and Approach, all of which are Web-enabled. IBM doesn't lock you into IBM databases. Many of its tools, including the Visual Age programming line, support ODBC. Sophisticated warehousing and heterogeneous database support are also available in products like DataJoiner and Visual Warehouse. And because Visual

Warehouse, like Digital Library, uses DB2 "under the hood," you can publish warehouse data over the Web.

IBM has also announced new Java-enabled data mining technology and programs that will complement business intelligence tools such as IBM's Intelligent Miner product line (`http://www.software.ibm.com/data/intelli-mine`), which is available under AIX, OS/400 and OS/390, and other related customer and product discovery technologies available at `http://direct.boulder.ibm.com/bi/tech/mining/index.html`. The Web versions will allow businesses to link site visitors with database marketing, cross-selling and customer retention programs and to perform tasks such as market basket analysis.

IBM has Web-enabled more than just its database and mining tools. For example, Rexx programmers can now use NetRexx 1.0 to generate Java code (`http://www.ibm.com/Technology/NetRexx`). MQSeries users might try the MQSeries Internet beta and MQSeries Client for Java products (`http://ncc.hursley.ibm.com/mqseries`), which will let users issue calls and queries from their browsers.

Want to control your Netscape Navigator with voice commands? IBM VoiceType Connection Netscape Edition brings voice recognition to the 32-bit Windows 95 version of Netscape Navigator 3.0. The beta version is available for free download from `http://www.software.ibm.com/is/voicetype/vtconn/vtconn.html`.

Hursley = Java++

If you're a Java developer, chances are you're already familiar with IBM's Hursley lab site (`http://ncc.hursley.ibm.com/javainfo/hurindex.html`), where you can find Java Developer's Kits (JDKs) for AIX, OS/2, OS/390 and AS/400. (To obtain the AlphaWorks Developer's Kit [ADK] for Windows 3.1, go to the AlphaWorks site.)

The Hursley site is also where you can find out more about accessing CICS (Customer Information Control System) over the Internet using:

- CICS Gateway for Java, which lets Java applets launch CICS applications–working with the IBM CICS Client.
- CICS Internet Gateway, a CGI script that provides 3270 emulation for a user's browser.
- CICS Web Interface (ships with the CICS Transaction Server for OS/390), which provides direct TCP/IP connection into CICS.
- The forthcoming server-based Java support for CICS.

By making CICS APIs and services available as Java class libraries, CICS will basically become a CORBA-compliant Java object server using the Internet InterORB Protocol (IIOP).

IBM's UK-based Hursley lab is the focus for most Java development.

MQSeries users can also participate in the MQSeries Internet Gateway beta (`http://ncc.hursley.ibm.com/mqseries`) or find out more about using MQX, IBM's new MQSeries service that lets MQSeries applications in the United States exchange data with other MQSeries applications over the IBM Global Network (`http://www.ibm.com/globalnetwork/cb9702.htm`).

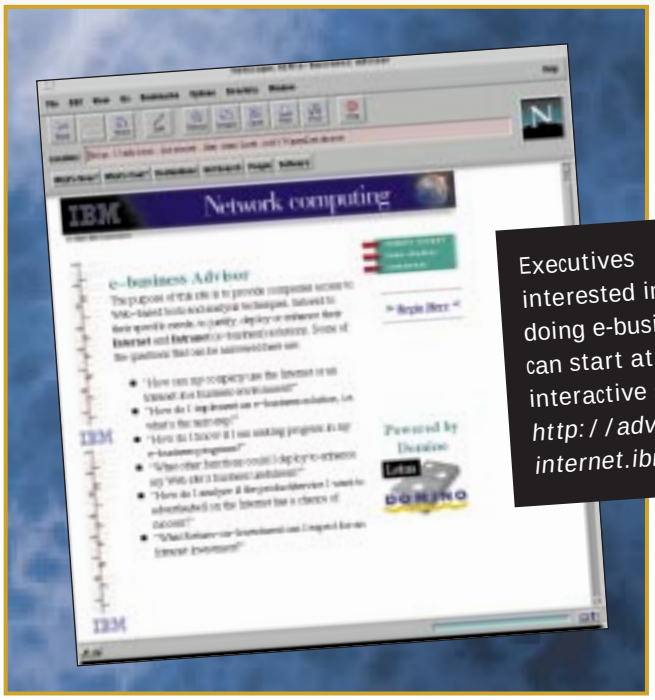
As you can see, IBM is making a tremendous amount of alpha and beta technology widely available. Some of the downloads such as J-Empower–an API for embedding Java code into applications–however, are password-protected and require you to be registered as a developer (`http://www.developer.ibm.com`). You can become a member of the Developer Connection for as little as $199, which entitles you to quarterly CD-ROMs that contain betas, examples, articles, white papers and so on.

Two of the services available to IBM's developer/partners are an Internet porting service and "100% Pure Java" certification. These services, now only available in the United States at the Waltham, MA, and San Mateo, CA, porting centers, are scheduled to be available at additional international labs in the near future.

To be fair, Hursley isn't the only site where Java development is progressing at warp speed, and IBM has created a Java site that not only showcases new tools (which, as of early February both happen to be Hursley products: AppletAuthor and CICS for Java), but also explains Java technology. AppletAuthor is a developer's tool that lets you create JavaBeans-compliant applets (JavaBeans is part of JavaSoft's Java class specification). IBM's VisualAge team is also working on a VisualAge for Java.

Lots of additional Java and Internet-related work is being conducted by IBM subsidiary Lotus. Betas are generally available at `http://beta.notes.net`, and that's where you can download Lotus Weblicator, for example, an application that selectively prefetches Web pages that you can store, sort and search while off-line.

The Lotus components team is also making Java applets available from `http://www.components.lotus.com`. Lotus is working on Java Database Connectivity (JDBC) support for Domino as well as a Java-based Domino.Document Manager that will provide check-in/check-out functionality. Lotus' main Internet site is `http://www.lotus.com/internet`.



Executives interested in doing e-business can start at IBM's interactive site: *http://advisor.internet.ibm.com.*

E-Commerce

Java technology is great, but only to the extent that customers are asking for it and its benefits. IBM recognizes that many of its customers want to do business over the Internet and is involved in developing and deploying a number of products and services. IBM has developed an interactive e-business advisor at `http://advisor.internet.ibm.com` for businesses that don't know where to start. Here, business people can find out how they can use the Internet in their businesses, how to calculate return on investment and so on.

For companies interested in rolling out commercial Web sites, IBM offers its CommercePOINT family (`http://www.internet.ibm.com/commercepoint`), which consists of Net.Commerce, World Avenue online mall and World Commerce.

Net.Commerce is a solution for retailers who want to run their own systems and handle their own payments. The package will generate dynamic, interactive catalog pages for shopping, check-out and ordering, and keep track of customer purchases and statistics. Entry-level Net.Commerce packages start at $5,000.

World Avenue is an IBM-hosted online mall that provides businesses with a secure venue for conducting e-commerce and the ability to use IBM's data mining and business intelligence tools.

World Commerce is IBM's turnkey system that gives retailers their own private label, stand-alone sites for conducting Internet commerce in a safe fashion built on Secure Electronic Transaction (SET) standards. IBM will optionally handle billing for any of its CommercePOINT customers and offers additional connectivity in the form of World Distributor and World Purchasing.

World Distributor is a service-based commerce offering for wholesale distributors and other business-to-business suppliers who want a complete Internet solution from catalog creation to account reconciliation. World Purchasing is designed for large businesses and governments that do contractual buying and selling and can be deployed either by IBM or the customer.

Lotus is also developing a Notes-based product for hosting Internet commerce, Domino.Merchant, which will support CyberCash and other SET-compliant products.

Like Lotus' Domino.Merchant, IBM's electronic commerce infrastructure is based on SET-based payment and certification. SET was jointly developed by Visa and MasterCard but is already widely adopted for secure credit card transactions over the Internet, and IBM is working with the global banking industry to implement related standards and technologies, including SET-J for the Japanese debit-card-driven marketplace.

IBM has four different electronic payment systems:

• Net.Commerce Payment is IBM's complete SET package that handles all aspects of credit card transactions over the Internet.

• Net.Commerce Payment Consumer is a browser plug-in that functions like an electronic wallet and allows consumers

to add, edit or delete credit cards and manage electronic certificates.

• Net.Commerce Payment Merchant is a SET-compliant payment processing application for merchants that handles transaction messages, encryption, certification and record keeping.

• Net.Commerce Payment Acquirer is a payment gateway that handles protocol conversion and transaction routing in a secure fashion.

IBM has export approval for its Net.Commerce family of products and is working with more than 40 members of the Global Key Recovery Alliance to promote the recovery of encrypted information in a fashion that is mutually agreeable among members and their governments.

IBM also offers digital certification services via the IBM Registry and World Registry, its digital certificate and public key infrastructure (PKI) products, respectively. PKI provides digital authentication, digital signatures and security functions. PKI lets cardholders verify that a merchant is a bona fide vendor. Merchants and banks can similarly confirm that customers have sufficient funds to cover a purchase.

IBM's Registry and World Registry products provide all the tools needed to authorize, record, track and handle digital certification online, but they're also suitable for internal communications over company intranets. Some organizations, for example, may want to validate communications between employees. IBM Registry is being piloted to select customers for their intranets, and a Web version should be available for general shipment by the end of 1997. IBM World Registry is slated to be available "to select companies" in the second quarter of 1997.

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CommercePOINT, IBM Registry and World Registry are all part of IBM's SecureWay brand of security-related hardware, software, services and consulting (`http://www.ibm.com/security`), which includes products and services as diverse as IBM AntiVirus software to IBM Emergency Response Service and the Global Security Analysis Lab (GSAL).

One of the fundamental components of IBM's secure commerce product line is its Cryptolope container technology (`http://www.cryptolope.ibm.com`), first announced in May 1996. Cryptolope containers provide a means for distributing digital content and enabling payment over the Internet. IBM's infoMarket, for example, delivers fee-based digital content contained inside the Cryptolope container, but the buyer can preview the contents shown on the Cryptolope's envelope.

IBM's recently announced DataBolts are a component technology designed to let customers put the more compelling aspects of their Web site offerings into components that can be distributed securely over the Web or across intranets. DataBolts can be ActiveX, Java applets and/or JavaBeans components that can be used directly by developers in conjunction with Web site development tools.

IBM's own Cryptolope DataBolt can also be used over intranets to control access to corporate databases that contain legacy information to be searched, for example. IBM has said it will create some 60 different DataBolts by the end of the year based largely on the content of its infoMarket and now defunct infoSage services. In the pipeline: Query & Retrieval, Cryptolope Packer, Cryptolope Opener and Current Awareness DataBolts.

IBM's technology is coming "out of the closet" (the labs) so quickly that it's difficult to keep track. Use this article as a starting point for familiarizing yourself with some of the aspects of IBM's diverse Internet presence. And don't forget its forthcoming Network PC, expected sometime this summer. In the meantime, where do you want to go today? AlphaWorks.com? Beta.Notes.Net? The Hursley site? Have fun.

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