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5-1997

InfoTech Update, Volume 6, Number 3, May/June 1997

American Institute of Certified Public Accountants. Information Technology Section

InfoTech Update

Information Technology for CPAs by CPAs

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COMMUNICATIONS TECHNOLOGIES

INTERNET AND BEYOND: HOW CITRIX WINFRAME CAN BENEFIT FINANCIAL MANAGEMENT USERS

By Dave Coulombe, Director, Corporate Products Group, Great Plains Software

Dave is the Director of the Dynamics C/S+ Products Group at Great Plains Software and is responsible for the product direction, product management, product development, quality and documentation teams. In this article, Dave discusses how you can effectively manage your information technology budget or that of your clients' utilizing the benefits of Citrix technology.

Introduction

How do you effectively manage your information technology budget? Or your clients'? Especially those faced with smaller budgets and increased service requests?

Information technology departments are faced with some dramatic decisions. As a result, many companies are moving to a more centralized management and

TECHNOLOGY CONSULTING

# REPORT FROM THE MICROSOFT PARTNERS' CONFERENCE

By Richard Koreto

Richard Koreto, a news editor on staff at the AICPA attended the conference and agreed to share his summary of the event with members of the Information Technology Section.

Some 1,200 CPAs discovered that Microsoft marketing manager Matt Davis wasn't kidding when he opened the Partners' Conference by saying "This is not your average CPE. . .We're going to have some serious fun. " Designed to help partners help their firms start technology consulting prac-

tices, the June conference, co-sponsored with Great Plains Software and Compaq Computer Corporation, used a best-selling author, an international television host, giant video displays and a frighteningly powerful stereo sound system to get the message across to small and midsized firms: Develop a tech-based consulting niche or get left behind.

On Monday morning, June 2, Davis introduced the British author and educator James Burke, whose TV shows explore the relationships between civilization and technology. Equal part

PHOTO COURTESY OF LINDA CHUNG/INSYNC
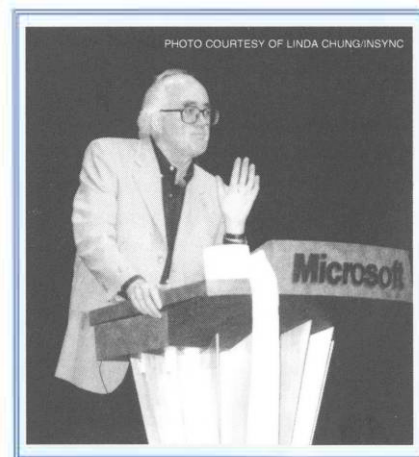
*Award winning television host, author and educator **James Burke** challenges conference participants to consider how technological advances continually change our business environment.*

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control of overall technology and information deployment. The result is a demand for client/server applications that can effectively run in a centralized deployment across a wide area network. The Internet and Intranet are also fueling a large demand for increased deployment of applications in a wide area network implementation.

The move to centralized control and management for information technology and the Internet's thin client architecture harken back to emergence in the 60s, 70s and 80s of centralized, host-based implementations with terminals. The difference is that companies today expect the remote clients or sites to use high-end workstations and receive all the benefits of desktop, client/server, Internet and Intranet applications. To achieve all of these and meet dramatic shifts in customer service and infrastructure needs requires very flexible technology.

WIDE AREA NETWORKING OVERVIEW

The telecommunications industry has been going through a major transition worldwide, both at a service provider level

and a technology provider level. The major changes include the availability of new services and technologies based on digital telecommunications lines and mergers. Services such as ISDN (Integrated Services Digital Network) offer lower cost and are being seen in more locations (including the home), which is fueling the push to digital communications worldwide.

The two primary types of telecommunications lines available today for businesses to connect local area networks into wide area networks are analog and digital. Digital lines are the primary type used by business for voice and data. Analog lines are primarily used by smaller companies (although this is changing rapidly as the cost of digital telephone switching technology and services continues to drop), in the home, and for dial-up connections via modem.

Telecommunications line technology is classified as narrowband and broadband depending on the bandwidth of the service. Bandwidth refers to the lines ability to carry a combination of voice, data, image and video. Analog lines and most ISDN services today are considered narrowband technologies. Frame Relay, ATM (Asynchronous Transfer Mode), SMDS (Switched MultiMegabit Data Service), BISDN (Broadband Integrated Services Digital Network), and satellite transmission are all broadband technologies. The primary difference between narrowband and broadband is that broadband services provide faster line speeds, higher quality, and move a combination of voice, data, images and video all on the same line simultaneously.

Services

The services available for wide area networking can be broken into two groups:

1. Analog

Modems using normal phone lines provide a low-cost and low-speed alterna-

tive, primarily for home use or small offices. The availability of 28.8 Kbps modems has given new life to this type of service and meets the needs of most home users accessing public services such as America OnLine, CompuServe or the Internet.

X.25 services are a packet-based service available for both dial-up and leased lines. X.25 is widely used due to the existing technologies. It is not a good solution for larger data volumes or mixed types of data, such as voice, data, images and video, due to its lower bandwidth.

2. Digital

ISDN is a very good service for wide area networking as it provides both narrow and limited broadband-level bandwidth to support transmission of voice, data, images, and video. The current drawback with ISDN is that the cost varies by telephone company and it is not available everywhere. These factors limited ISDN's penetration in the marketplace when it was initially offered by the telephone companies. Service availability is increasing across the world and ISDN prices are dropping to compete for Internet connections and dial-up services.

SMDS was made available by the telephone companies to provide a broadband service that leverages their current investment in digital switching technology until BISDN is generally available. There has been limited support for this service and it is generally not used in the market due to its high cost and availability.

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Frame Relay has its roots in standards set for ISDN and BISDN and provides on-demand bandwidth. It has become one the most popular services for companies implementing wide area networks because the number of users and network traffic justify the cost.

ATM, which has its roots in standards set for ISDN and BISDN, provides a very large bandwidth solution for voice, data, images, and video. ATM is not widely available today and is very expensive. As a result, ATM's promise of very fast transmission speeds is attractive only to very large companies with heavy network traffic loads.

The services defined above are provided by the telephone companies around the world, but the overall availability of any one or a combination also depends on the telephone company. What this means is that an ISDN service could be available in San Francisco, but not Grand Forks, and you would not be able to connect the two sites using ISDN.

WIDE AREA NETWORKING TECHNOLOGIES

Interconnecting multiple local area networks into a wide area network is accomplished using one of the following primary methods:

Modems

Modems provide a single connection between two local area networks or from a standalone workstation to a local area network. Typically these connections are best for lower volumes, but with ISDN becoming cheaper and more readily available, this could change dramatically.

Gateways

Gateways are used to translate between two different protocols such as an e-mail gateway that translates between IBM's Profs e-mail and Lotus Notes Mail or Microsoft Mail. Gateways are used primarily to connect dissimilar networks at an application level to allow file and, print sharing and mail service connectivity.

Routers

Routers are used to connect multiple Local Area Network segments or LANs into a wide area network. Routers maintain separate identities for each LAN segment but must support the network protocol being used, such as IP, IPX or DECNet. Their advantage is that they do not broadcast information across the network, as they route directly to an address on a specific segment of the network, which lowers network traffic.

Bridges

Bridges also connect multiple LAN segments or LANs into a wide area network. The key differences are that a bridge makes the LAN segments appear as one LAN and are implemented on LANs using only the same network protocol, such as Novell's IPX. Because bridges treat the entire network as one LAN, the information transferred is broadcast to all segments, increasing the network traffic. This situation is referred to as a broadcast storm. There is a hybrid version of a bridge/router called a BRouter that provides the flexibility of both a router and a bridge.

Switches

Switches are used to connect multiple LAN segments much as a router does. They employ the same technology used for telephone switching in an office. Switch technology is required for broadband technologies such as Frame Relay, ATM and SMDS.

Remote Access Servers

Remote access servers (RAS) allow remote users to connect into a local area network using a telecommunications service including dial-up, X.25, ISDN, Frame Relay, ATM, or SMDS. RAS servers still require implementation of a specific interconnection technology, such as an ISDN card placed in both the workstation and the server. When connected to the network through a RAS server, the user is basically treated as if he or she were a local workstation on the network, with all the rights and privileges provided to such a user.

Remote Access Software

Remote access software allows a remote user or users to connect into a local area network and run the software from the remote location on a local workstation or server. The remote user is presented only with the user interface: all processing takes place on the local workstation or server. PCAnywhere and Carbon Copy are single-user products that require one workstation for each remote user. Citrix WinFrame is a multiuser product that runs with Windows NT and can support multiple remote users connecting into one Windows NT server running WinFrame.

NETWORK COMPUTERS

Sun Microsystems coined the phrase "the network is the computer" around 10 years ago and today we are starting to see this statement become reality. The combination of the Internet and the overall cost of computing have helped to drive the debate between the PC and Network Computer (NC) in the technology industry.

An NC is basically a PC without all the parts. What it does have is a screen, keyboard, mouse, network connectivity, processors and memory. What it is missing are the disk drives. Although this sounds like a PC, it's not. The NC requires much less processing power than a PC. The reason is that NC-based applications run on the server instead of the client. The phrase that has been used to describe this is "thin client" computing. Only what is absolutely necessary is loaded over the network to

the client and runs on the networked or remote client. Some of the key things to remember about NC's are:

❖ Because they require less computing power, they typically cost less than PCs, but cannot do as much.

❖ They can provide a lower overall cost of ownership because the overall application software deployment and maintenance is done centrally from the server.

❖ They will not replace all PCs in an organization as many applications require the power of a PC, such as a customer information system used by field sales people who need to run the complete application even when disconnected from the network.

❖ The NC is not a return to terminals running on centralized mini and mainframe computers, they have the promise and in some cases the capability to run very complex applications.

The network computer will not replace client/server computing, but there are still a large number of terminals deployed across the globe that cannot run next-generation applications software. What the NC provides is yet another means of cost effectively deploying complex business applications to meet a wide range of business needs. The NC provides information technology managers with another weapon in their IT arsenal.

CITRIX WINFRAME ENTERPRISE

Enterprise Deployment Challenges

With the introduction of Windows 95 and Windows NT, Microsoft Windows is rapidly becoming the preferred 32-bit application platform. As IS managers introduce advanced Windows applications into the extended enterprise, they face the challenge of how to effectively deploy 32-bit applications beyond LAN-connected, PC

users. The challenge is two-fold. First, users may be remote to the LAN, connecting into the corporate network through high-bandwidth WANs, over the Internet, or from low-bandwidth dial-up lines. The second challenge is that users may not even have a Windows-based personal computer, but may instead have a DOS-based system, Unix workstation, Macintosh computer, fixed-function terminal or wireless device.

The solution to consistent, enterprise-wide Windows application deployment — regardless of user location or client hardware — involves a network-centric, three-tiered application architecture. Under this model, the application execution and data storage occurs on a central server (or servers), and only a thin piece of client software is required at the client system. One way to achieve this three-tiered architecture is to re-write enterprise applications. A more practical method is to use universal, thin-client software in conjunction with an application server and a distributed Windows display protocol.

Citrix WinFrame

Citrix WinFrame is a multi-user Windows application server based on Windows NT under license from Microsoft that supports enterprise application deployment using a thin-client architecture. This network-centric approach includes universal, thin-client software that works in conjunction with WinFrame multi-user application server software. Enterprise applications execute on the WinFrame server and are accessed through thin-client software over dial-up, LAN, WAN, Internet and Intranet connections. The thin-client architecture provides users with consistent, high-performance and universal access to any type of application, including DOS, Windows 16-bit, Windows 32-bit, and client/server programs, regardless of available bandwidth

or client hardware. The multi-user application server design provides IS managers with an economical and manageable way to deliver applications across the extended corporate network or public Internet.

The key to this thin-client architecture is a distributed Windows presentation services architecture developed by Citrix, called ICA.

What is ICA?

Citrix's Independent Computing Architecture (ICA) is a general-purpose presentation services architecture for Microsoft Windows. Conceptually, ICA is similar to the UNIX X-Windows protocol. ICA allows an application's logic to execute on a WinFrame multi-user Windows application server, located on the LAN. Only the user interface, keystrokes, and mouse movement are transferred between the server and the client device over any network or communications protocol, resulting in minimal client resource consumption. ICA is designed to run over industry-standard network protocols, such as TCP/IP, NetBEUI, IPX/SPX, and PPP, and industry-standard transport protocols, such as async, ISDN, Frame Relay, and ATM.

The ICA protocol diplays only the user interface from an executing machine on another machine. ICA provides true location independence for Windows applications by running the Windows application at one location and executing the program's user interface somewhere else. This distributed Windows architecture allows Windows 16-bit, Windows 32-bit and client/server applications to perform at very high speed over low bandwidth connections. It also allows 16-and 32-bit applications to run on legacy PCs as well as new-generation, light-weight client devices.

Why is this Important to Financial Management?

The need to control costs and centralize information and processing are driving the

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interest in remote computing, wide area networking, and the Internet. Financial and operational managers want access to information and systems from anywhere in the world. Information technology managers need to provide high levels of service while reducing overall administration costs. This is driving a push to what is called zero client administration, as well as network computing, Windows terminals, and the Net PC concept from Microsoft.

With Citrix WinFrame and any of the remote or wide area networking technologies and services, managers can deliver the following business benefits to organizations:

1. Zero client administration. This allows centralized management of applications software used by local or remote employees, thereby reducing overall expenditures or improving cost management

2. Acceptable performance for complex applications over low bandwidth telecommunications services such as the Internet. This improves information access, reduces application deployment costs and allows management of a business remotely

from anywhere in the world where there are telephone communications.

3. Lower technology investment on the desktop. It's not necessary to have the typical power of a high-end Pentium-based machine if Citrix WinFrame servers deploy the application, even over a local area network. In addition, companies can deploy complex client server applications to employees who previously could not access the systems due to limited desktop computing power. This means longer payback on an investment than the one to two years typically seen with desktop PCs today.

4. Secure deployment of applications across the Internet. It's possible not only to deploy on the Internet, but also to ensure application-based security. Wide area networking costs less and secure connections across the globe are ensured.

5. Implement Windows technology across legacy-based desktops. Return on investment across all computing technology in your organization is improved.

6. Secure connections for employees, customers and business partners.

This improves employee morale, customer satisfaction and partnerships by providing secure, remote access to critical information to each party.

The types of information customers will want to move across the wide area network will continue to be predominantly voice and data. There are no hard and fast rules on which services are best for customers; The choice is highly dependent on their size, user load, information volumes and types of information they need to move. Careful networking planning is the key to successful implementation.

Flexibility is the key-word of this architecture because it allows companies to deploy technology and complex applications very quickly. In addition, it allows to expand your company digitally and get ready for the coming electronic commerce wave that will make the client/server computing wave of the 80s and 90s a distant memory. Get connected, go digital and gain strategic competitive advantage. **IT**

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Partners' Conference

Oxford don and Monty Python, Burke managed to weave a humble accounting facet--double-entry bookkeeping—into a historical tapestry that included the printing press, the pendulum clock and the Reformation. He made it clear that the most traditional CPA can be swept away by changing technology. Info tech consultant Don Tapscott, author of The Digital Economy, spoke next and lent a very human perspective to the way technology changes our lives. Leadership had traditionally been a top-down affair, he said, but in the new paradigm, with everyone having access to information, leadership can come from anywhere. And yet, ultimately technol-

ogy itself does not determine the future; the people who use it do. "The future is not to be predicted," he warned, "it is to be achieved." He admitted that although he's proud his teen-aged daughter has her own Web site, he does wish she'd give him the password so he could see the "parent's section."

AICPA President Barry Melancon then echoed some of Tapscott's themes with one of his favorite examples during a talk on the significance of consulting to the profession. He noted that the long supremacy of the Swiss watch industry faded rapidly when it failed to pick up on the importance of the revolutionary quartz watch. He urged CPAs to be forward looking, and not to be bound by their name: "The A in CPA is our biggest problem," he said.

On Tuesday morning Davis introduced Mike Maples, a retired Microsoft executive VP, and Mike Brown, Microsoft's CFO. Maples led the conference's only technology demonstration and discussed some of the technology possibilities for today and the near future. Brown, a former Deloitte & Touche partner who oversaw the Microsoft engagement, presented a light financial history of Microsoft: Bill Gates' initial accounting system apparently was a bulletin board stuck with scraps of paper noting each expense. Tuesday after noon, VISA International founder Dee Hock spoke on the philosophy of organizations and gave examples from his own career of the difficulties and rewards of being an innovator.

Partners' Conference

One general session highlight was the announcement of the Technology Advisor

Program, which led to a near-instant sellout of the discounted initial offer. See sidebar.

In addition to these general sessions there were four breakout sessions: Juan Lorenzo Martinez, partner-in-charge of a firm in Puerto Rico, gave details of how he set up his practice and how he compensates his professional consulting staff with a bonus system. John Harris, CEO of George S. Olive & Co., presented his recipe

for success that led to a consulting practice with over 100 professionals. Edi McHenry, a consultant to CPA firms, shared a lot of her insights and some of her checklists, including one that helps client companies assess the quality and quantity of information they receive. And Steve Sydness, a group vice president at Great Plains Software, moderated a discussion on different models. The panel included Andrew B. Wyatt, partner-in-charge of Frank, Rimerman & Co.'s business systems consulting practice; Allen C. Berg, president and founder of Berg, DeMarco, Lewis, Sawatski & Co.; and Mark A. Harvat,

AICPA Technology Advisor Program

Introduced at the Partners Conference, the Technology Advisor Program was created and is offered to members of the AICPA who wish to expand their existing practice.

Overview

The AICPA Technology Advisor Program (TAP) is designed to help CPAs offer their clients technology solutions to business problems. The program provides the foundation on which a CPA firm can build a business systems consulting practice. The pioneering TAP vendor is Microsoft, whose Microsoft Action Pak (MAP) includes products, training and technical support.

The CPA profession is experiencing competitive challenges and new opportunities brought by the rapidly changing business environment. At the same time, CPA firm clients, particularly small businesses, are in need of an expanding source of trusted business and technology advice.

Value

TAP participants will be able to demonstrate technical competency to complement their business acumen by showing they have met the highest educational standards as set by the AICPA and Microsoft. When presented in a client scenario, these credentials demonstrate technical excellence — giving TAP consultants a competitive advantage.

As the first vendor participant, Microsoft has worked closely with the AICPA on development and delivery of the TAP. The products and courses are based on existing Microsoft offerings, and have been specifically tailored for the AICPA. The training offered in the program will also prepare CPAs for the Microsoft Certified Professional (MCP) exam.

A Certificate of Educational Achievement (CEA) is available from the AICPA upon completion of the designated TAP curriculum and the MCP exam. The CEA focuses on specific areas of competency within the CPA profession (other CEAs include Business Valuation and Personal Financial Planning).

Microsoft Action Pak Components

Participants will receive the following:

Microsoft Products*

BackOffice 2.5 Server:**

- Windows NT Server 4.0
- Internet Information Server 2.0
- SQL Server 6.5
- Exchange Server 5.0
- SNA Server 3.0
- Proxy Server
- Systems Management Server 1.2

Site Server 2.0

Windows NT Workstation 4.0

Windows 95***

Office 97 VAR Edition

Project 95

Internet Explorer (IE) 3.02

Services

Technical Support Options:

- Limited Toll-Free Phone Support
- Online Tech Resources
- One month trial subscription to TechNet (two CD-set)

Two-day training on Office 95 or Office 97 application****

Coupons for discounts toward "Installing and Supporting Windows 95" training class

Other valuable coupons

Pricing and Availability

The AICPA will begin shipping the MAP by September 2, 1997, for a base price of $849. Training will be delivered through the AICPA and Productivity Point International.

The coupon for the Windows 95 class will allow participants to enroll in a course with a retail value of $2,200 at a discounted rate of $1,399. Completion of this course is required to qualify for the TAP-recognized MCP.

If for any reason a participant is not satisfied, the AICPA will issue a full refund if the package and its contents are returned unused.

For More Information

For more information on the Microsoft Action Pak, AICPA members can call 800.862.4272

*Product is intended for internal use only and cannot be resold. **Includes 10 client access licenses. ***Windows 95 will only be included for the first 500 participants. ****Instructor-led and multimedia-based options available.

Pricing and Availability

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manager in the consulting services group Schenck & Associates. Participants concluded each session by asking many questions to gather even more details on practice management.

Breaking up the talks were video presentations, including a song & dance satire about the Internet and a snippet of Bill Gates in an Internet addicts support group. Monday's dinner gave participants a chance to share notes and network with colleagues, and the evening concluded with a performance by country singer Mary Chapin Carpenter that led to danc-

ing in the aisles. A tired but still enthusiastic Davis opened Tuesday's general session by asking if everyone now knew what he meant by "serious fun."

Breaks between the various sessions were minimal or nonexistent and most participants spent the little free time at the vendor booths. Large and small software companies, publishers and associations gave out brochures and free samples. (Great Plains evoked its North Dakota prairie headquarters by giving away sunflower seeds.)

Many participants said they got a lot of ideas and were looking forward to going back to their firms and get-

ting started. Several said they hoped Microsoft would repeat the conference. Participants were pleased — and sometimes surprised—that the conference did not turn out to be a two-day commercial for Microsoft. There was no push to purchase Microsoft software; however, every participant left with a free copy of Microsoft Office 97.

Of course, not every attendee agreed with every speaker; there may be as many models for consulting success as there are CPAs who provide it. But everyone agreed that it was not your average CPE. **IT**

SECURITY

ASPECTS OF INTERNET SECURITY FOR THE ACCOUNTANT—A PRIMER

By Charleen Gust and Dan Schulz

Charleen is an Internet marketing manager with Great Plains Software in Fargo, North Dakota. Dan, who is also with Great Plains Software, is an Internet development manager. This article acts as a primer, a basis of information for the accountant on Internet security. Upcoming issues will discuss securities issues affecting the topics of Cookies, Java, and Active-X.

The AICPA Information Technology Committees rated security as the #1 technology issue for 1997. It is easy to see why. As the Internet, Extranet and Intranet explode, information is easier to access. By far, the benefits outweigh the risks. Information can be seamlessly shared across the enterprise in a digital format. Trading partners are more productive exchanging information electronically. The perceived risk, however is the security of this information.

Keep in mind that as Internet technology has evolved, Internet security has become more of a societal comfort

issue than a technology issue. As a result, technologies exist today to set up a secure Internet site. And, society is becoming increasingly more comfortable using the Internet in business transactions. It won't be long before a large percentage of the population is comfortable using the Internet as a primary business component.

In fact, according to William Gurley (DMG Technology Group), "on-line commerce is on fire." Dell Computer is now doing over one million dollars a day from its web site, Cisco Systems is on a yearly run rate of one billion dollars. While many businesses are using the perceived lack of security and reliability of the Internet and electronic commerce as an excuse not to take action, some companies are speeding ahead, fulfilling consumer thirst for the convenience of this type of commerce. What are your competitors doing?

Options for Internet Security
There are four types of security to consider when discussing the Internet: *physical*,

transmission, *authentication*, and *application*.

Physical security refers to making the servers and clients inaccessible to unauthorized personnel and is often overlooked in designing a security system. All investment in software security is wasted if an unauthorized person can simply walk off with a computer that contains confidential information. The same physical security precautions implemented for LAN clients and servers (**i.e., restricted access, file backup and secure storage, and adequate disaster recovery plans**) should be implemented for Internet clients and servers.

Transmission security means encoding information as it is sent across the Internet, thus preventing unauthorized persons from intercepting and reading the transmission. Electronic commerce is a prime example. Transmission of credit card information must be secured. Another prime accounting example is transmitting business data such as financial statements, bank account information, customer records, etc. Transmission security depends on how the browser and the Internet server are

connected, not on the application itself. Both Netscape (Navigator) and Microsoft (Internet Explorer) provide support for Secure Sockets Layer (SSL), a popular form of transmission security, in their browsers. The Internet server can be set to accept only and send secure transmissions, which will secure all information sent and received against decoding. There are also other protocols for secure transmission, such as tunneling (described below).

The Microsoft Internet Information Server (IIS) implementation of SSL supports 128-bit encryption. A version of Microsoft IIS that supports 40-bit SSL encryption is available for use outside North America. The more bits used in encryption, the greater your security. Therefore, the U.S. has decided that anything above 40-bit encryption (which the U.S. government believes it cannot decode) could be a security risk. The major factors controlling the volume of bits used are processing time, convenience, and Internet server (software) capability.

Authentication security ensures that only authorized users can get access to information on a Web site. At the basic level, this is also a browser, server, and operating system issue, not just an application consideration. There are a number of methods available to ensure that only authorized users can access a web site. A popular method is Windows NT Challenge/Response security, which ensures that only users granted access to the files that make up the Web will have access to the Web site. NT security also allows you to specify which areas of the disk (and thus which Web pages) a person can use. Firewalls are another example of authentication security.

Application security provides an additional security layer for applications. For example, an electronic commerce Internet application may require a valid customer ID/password before allowing an order to be placed or viewed. Application security can be used in addition to transmission and authentication security between the browser and the server.

Firewalls

A firewall is a combination of software and hardware that authenticates all transmissions between the two enterprises, including communications via the Internet. The firewall determines which inside services may be accessed from the outside, which outsiders are permitted access to inside services, and which outside services may be accessed by insiders. For a firewall to be effective, **ALL** traffic to and from the Internet must pass through the firewall, where it can be inspected to verify if it complies with the company's security policy.

Proxy Servers

A proxy server is a specialized service that takes a user's request for an Internet service, such as WWW or FTP, and forwards it to the actual service, according to the company's security policy. It replaces the service, acting as a gateway to the real service. Each proxy service requires two components: a proxy server and a proxy client. The proxy server runs on the firewall computer, which has two network adapter cards. One network adapter card communicates between the firewall computer and the internal network. The other network adapter card communicates between the firewall computer and an external network, such as the Internet.

A proxy server verifies data coming into or going out of an organization, as well as user access. It can also be used to scan files for viruses. An enterprise may choose to add a proxy server to its security system to protect the organization's data, and that of their clients or customers.

Tunnels

Tunneling provides a combination of authentication and transmission security. It allows secured transfer of information between one computer and another over the Internet as if the two were connected by a single physical wire. The process of sending information through tunnels is simple and straightforward. After authenticating the tunnel client and the tunnel server, information is encrypted by its sender, encapsulated into TCP/IP (the transmission protocol of the Internet) data packets, and sent across the Internet as unreadable and unrecognizable data. Once they reach their final destination, the packets are reconstituted, and decrypted into readable form.

Tunnels might resemble SSL, but they go one step further. SSL can be used with tunnels, but tunnels allow circumvention of firewalls upon verification. Tunnels usually have a higher level of security than the firewalls they are circumventing.

Windows NT Remote Access Server (RAS) and Security

With a Remote Access Server (RAS) setup, you transmit and receive data over a phone connection to a server located at your company rather than through the Internet.

The advantages of RAS are security and, potentially, cost. The security aspects are clear —only people who have the phone numbers and an ID/password will be able to log into a server. Data is never transmitted nor available with the public Internet space. The cost could be less than an Internet connection if there is minimal long distance dial-up traffic.

The disadvantages of RAS are volume and, potentially, cost. If there are many remote dial-ups, then long distance charges could become very high. With an Internet connection, each person has an option of dialing a local

number without long distance charges. With RAS, they may have to dial a long distance number, although the potential use of an 800 number may be a cost-beneficial option. The volume issue involves the number of people calling versus the number of modems in the RAS modem bank. If there are not enough modems for the number of people calling, busy signals occur. Adding more modems and phone lines (and perhaps RAS servers), may push costs considerably higher than those for an Internet connection.

Conclusion

Near and dear to the accountant's heart, and mandated by professional standards, is the safeguarding of assets. The prospect of giving millions of Internet users potential to grab these assets in cyberspace is downright frightening. While no internal control system is foolproof, it can be argued that if proper investments are made in prudent physical and electronic security, an Internet application or connection can be made as impregnable as a strong, concrete-embedded safe. The trade off? Increased productivity, rapid flow of vital business information where needed, and happier trading partners. **IT**

For More Information

Check out Microsoft's Web Executable Security Advisor program, which is available as a free resource and which provides crucial information on security threats posed by executables found on the Internet. The Web Executable Security Advisor program includes a regularly updated Web site, mail lists and other education programs on threats such as those posed by anonymously distributed executable code. The program is available initially at http://www.microsoft.com/security.

ELECTRONIC DOCUMENT MANAGEMENT

A FOLIO VIEWS CASE STUDY

By L.D. Ruffing, CPA, Bell Atlantic Corporation

Lynn is a Certified Public Accountant and member of the AICPA and the IT Membership Section. Additionally he is a member of the Pennsylvania and Virginia State Societies. In this article, Lynn shares with us a success story realized as his department utilized electronic document management, the technology ranked number two in the 1997 AICPA list of top technologies.

The Trust Asset Management Department at Bell Atlantic Corporation is responsible for the administration and investment of $20 billion in pension, savings, and other employee benefit funds. The seven-member department maintains dozens of relationships that generate investment recommendations, agreements, and other important control documents. The group needed a system to centralize, organize, and improve security, and to enhance the accessibility of these documents.

Electronic or paper copies of documents were previously stored at several locations around the office or on various computers and network drives. Some originals and copies were in the individual files of staff personnel. Most recent documents were prepared using word-processing software (MS Word) and then filed in hard copy. Sometimes the original documents were furnished by the vendor or other business partner. Misplaced documents or confusion regarding the date of revised documents was a constant source of frustration and inefficiency.

To solve this problem, management decided to establish an integrated system using text and document indexing to electronically store, search, retrieve, and link important documents.

Getting Started

To begin, an outline was developed for an electronic document management system that utilized database indexing technology. We ultimately selected Folio Views software from Folio Corporation for our system based on a recommendation from the legal department, which had just purchased the software and was also creating a database. Folio Views was also chosen because of the price and positive feedback about the product. Folio Views finished first in a product comparison in InfoWorld Magazine (July 22, 1996) and was listed among "The Best of 1996" in InfoWorld Magazine (January 27, 1997).

Requirements

We wanted a document management system that provided multiple users ready access to text documents. A system that would be easy to maintain, easy to use, and priced to meet our needs.

Choosing the Systems Consultant

An external consultant assisted us in the development of the system and was chosen based on: (1) recommendation of the document management software company, (2) the consultant's successful prior work with a Bell Atlantic subsidiary, (3) the proximity of the consultant's office to our Bell Atlantic headquarters building, (4) price, (5)

ability to meet our quality requirements, and (6) ability to meet our deadline for completing the work.

The scope of the consultant's services included:

1. Consulting on needs assessment and database structure.

2. Installation of a scanner, scanner software, and OCR [optical character recognition] software. (Buying a scanner was cheaper than contracting to an outside scanning vendor.)

3. Scanning approximately 3,500 pages of documents for the initial database.

4. Proofreading documents in the database and installing appropriate links and query levels in the database.

5. User training.

Document Training and Formatting

Information in the database is categorized by: document type, document name, document date, investment asset class, and benefit trust name. This information is included in each document as a standard document title.

These document titles are easy to find while searching the database.

Users may visually search table of contents or use the query function to search the database for a specific document. The query function operates in a hypertext mode, similar to a Windows help program or Internet link.

Searching capability is enhanced via the use of multiple programmed levels in the database, with document type being Level 1. Level 2 is the sub-document type, such as "Agreements-Trustee," or year; and Level 3 is document name, benefit trust name, or hypertext linked data files. The use of levels produces a well-organized database and Table of Contents.

MS Word is the primary input format for the database. The hypertext linking of files (other than text or MS Word format) in the database may be done if Excel, Powerpoint, or other files are too large to input directly into the database.

Document formats are standardized to add a consistent look to the database.

No unusual fonts or file formats are used in order to maintain a standard appearance for aesthetic reasons and to enhance the usability of the database.

Graphics such as scanned company logos, document letterheads, and other images may be input directly or linked to files outside the database. Links to other applications, other databases, or specific files are easily inserted into the database.

Electronic copies of original documents are forwarded via E-mail to the individual responsible for database input. Generally, outside business partners are asked to furnish documents in MS Word format, but an original document may be scanned if necessary. Original signatures may also be scanned and stored in the database, or to save time, may be typed manually into the document or database.

Features of Folio Views

Folio Views has interesting features besides storing text and graphics.

Individual users may create customized files of bookmarks, highlighted text, or personal notes regarding the database. This, in effect, creates a personalized document database for each user.

The table of contents window within the database expands and collapses to show all levels of the database. This is handy when doing a query since users may readily switch to table of contents to find query results, or hits, at a high level within the database.

Jump links may be created to other sections of the database, other programs, or other computer files. Rather than importing a complex spreadsheet or graphic you may choose to create a link from Folio Views to a another program or file. Clicking the jump link in Folio Views automatically opens whatever program or file the user chooses.

Conclusions

The database now contains approximately 1,000 documents, or 5,000 pages of financial reports, phone and address lists, calendars, contracts, recommendations, and references to other tools that have helped us do our jobs more efficiently. It is connected to the LAN and may be accessed from the office or remote locations.

The success of this project has served as a model for other departments that have asked for help in developing their own document databases.

Interested parties may reach the author with questions or comments at L.D.Ruffing@Finance.Bell-Atl.com. **IT**

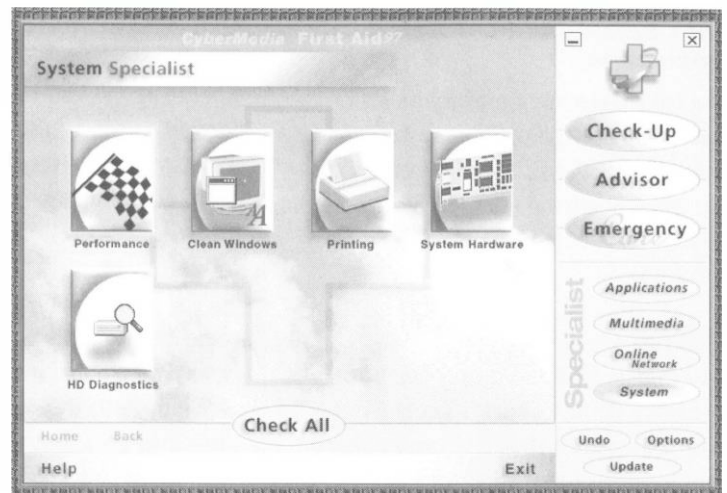**THE BUCKETS®** by Scott Stantis

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OIL CHANGE

FIRST AID

TECH TOOLS

GIVE YOUR COMPUTER A COMPLETE PHYSICAL USING OIL CHANGE AND FIRST AID

By Chris Leach, CPA

Chris Leach is a sole practitioner in San Diego, California, chair of the IT Practices Subcommittee and a member of the Information Technology Membership Section. Here, Chris shares with us some tools he has found to be extremely helpful as he attempts to keep up with ever-increasing rate of change in technology development.

It's Saturday, a day when I usually do errands and maintenance on my vehicles. As I pulled into a quick oil change facility close to my office I remembered that I also needed to change the oil on my PC too. You haven't neglected your PC, have you? Where is the dipstick, you ask? Well now that you are a bit alarmed, let me explain what I mean.

With the rapid changes occurring in software and hardware interfaces, our computers are often out of date the day we install a particular version of software. Technology companies are finding it almost impossible to anticipate the changes and updates that end users need to make their computer systems run efficiently. How many times have you found out that the drivers needed for a particular application were out of date? Or when was the last time a software support engineer told you that you needed the latest patch to fix a program bug? You reply that you have just installed the software from a brand new, never opened, and non-pirated box of their company software. And it's already out of date!!!!

Well, as I said, change happens so quickly that software and hardware companies find it more cost effective to provide updates and patches and new drivers electronically to their customer base. Now all you have to do is go to each Website or bulletin board for each program on your system, determine whether or not there is a file you need to update your system, download the file, and install the update. Sounds easy enough, but who has the time to do it?

Oil Change

Well, along comes a company named CyberMedia with a product called Oil Change. For an annual fee, Oil Change scans your system for current hardware and software versions. Then either through an Internet, America Online or CompuServe connection, the software scans the companies database for the latest patches, drivers and updates.

After a scan of your system , Oil Change displays a listing of the updates it has found — similar to the one above. All you need to do is choose which ones you want. The system will walk you through the rest of the process. Double click on the updates you need and Oil Change will contact the vendor's file download area and complete the process. The lower portion of the screen will inform you of the estimated time to download the update, whether or not the program can be automatically installed by Oil Change, and the purpose of the particular update.

If the program is installed auto-

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