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Practical Advice For Implementing Technology

Audit Implications of Client/Server Computing and Distributed Processing

By J. Christopher Reimel, Jr., CPA

Chris Reimel is chief of Information Systems Audit with the New Jersey Department of Labor. He is also a member of the Information Technology Practices Subcommittee. In this article, he discusses the management concerns and audit issues surrounding client/server computing.

Client/server computing has been defined as a group of computers (clients) that access information from another computer (server). The server in turn makes information available to the clients, and can be thought of as a small file cabinet that stores and distributes data. While a computer may be a receiver of information (client) in one client/server relationship, it can also be a sender of information (server) in another client/server relationship.

Distributed processing has been defined as the processing of data at locations other than the mainframe or minicomputer. As more and more users are attached to a system, the response time to the mainframe and/or minicomputer becomes longer and longer. Consequently, users decided that they should process as much data as possible at locations other than the mainframe or minicomputer. Thus, the genesis of the idea that data should be processed on microcomputers and then sent to the mainframe computer or minicomputer for storage. As microcomputer prices began to tumble, users began processing data on a "string" of microcomputers and then sending the data to the mainframe computer. In short, distributed processing is processing data at satellite locations rather than at a central location.

The basic theory behind client/server computing and distributed processing is that clients can and should do as much processing as possible—at the lowest level possible—since it is thought to be less expensive to process data on the microcomputer than on the minicomputer or on the mainframe. Recent studies are beginning to question this theory, however.

The major reason that processing is done at the lowest level is because users want control over their departmental data, even though it is also corporate data. They do not want to wait for mainframe or minicomputer programmers to write application programs for them, nor do they want to contend with mainframe or minicomputer response time. Many large organizations still have a three-year backlog of program modifications for the mainframe computer or the minicomputer.

Users also do not want information systems (IS) decisions being made for them by IS professionals at a distant corporate office. They feel that information is an important component of their product or service, and therefore it must be managed like any other component. Information is too valuable and too important to their jobs and to the profit or loss of their business unit for them to relinquish these decisions to others. Bonuses depend upon performance, and information is now a key component of performance.

Users do not want to relinquish the control they have over their microcomputer data. This is a major issue and should not be overlooked. It is both a technology issue and a management issue. Technology is viewed as a tool enabling users to reacquire

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control from the centralized data processing group. Therefore, in some organizations, client/server and distributed processing give the user the best of both worlds, namely:

- control over their data
- control over their work
- access to other users' data

However, it should be noted that in some organizations, the IS department has control over the client/server systems instead of the user.

The major difference between distributed processing and client/server computing is that distributed processing involves finding a faster, less expensive way of processing data (distributing the work), while client/server computing involves giving (serving) data to users. Some people use these two terms interchangeably. Others do not accept these definitions and distinctions. The basic premise, though, is to process the data as close to the user as possible.

A summary of the advantages and disadvantages of client/server computing and distributed processing was offered in an article entitled "Assessing New Technologies" which appeared in the June 1994 issue of *Internal Auditor.*

Advantages

The following are the advantages of client/server computing and distributed processing: (It should be noted, however, that some of these advantages may not be present in all organizations.)

- work is performed at the optimal level
- work is performed at the least expensive level
- the user has access to more information
- the user has control over information
- improved user productivity
- strong application development tools
- quicker application development
- faster response time
- improved system availability

Disadvantages

The following are the disadvantages of client/server computing and distributed processing:

- controls that were present in a centralized environment may not be present in all local environments
- it is a more complex environment that requires and currently lacks good system management tools
- there are inadequate utilities to manage the system
- there is a steep learning curve required of all users including the IS department
- system development is more difficult and complex
- integration with other systems may be difficult
- there are new security exposures
- there is poor system availability

Client/server processing is being adopted by more and more organizations. For example, in 1993 Chase Manhattan Bank had 600 servers and 22,000 clients in a client/server environment. By the end of 1994, they had roughly 10,000 servers. A November 1993 *Information Week* survey found that 97 out of 100 IS executives already had some kind of client/server initiative. The following chart, which originally appeared in the May 2, 1994, issue of *Deloitte & Touche Review,* shows the increase in client/server systems by industry.

Client/Server Applications by Industry

	1992	1993	1995 (est.)
Health Care	6%	33%	69%
Manufacturing	4%	32%	60%
Banking and Financial Services	7%	32%	57%
Retail and Distribution	4%	19%	55%
Insurance	6%	21%	53%
Energy, Oil, Gas	4%	18%	50%

Types of Servers

As discussed in *Forbes ASAP* (April 11, 1994) users generally identify one of three types of servers:

- Desktop PC Servers—Personal computers that sell for less than $5,000 and are designed for use with non-mission-critical applications in offices with fewer than 10 users. Examples are AST Premmia, Compaq ProSignia (entry level), Compaq Deskpro, and IBM Model 95.
- Specialized Servers—Dedicated machines that sell for less than $15,000 and are designed for use with mission-critical applications in offices with more than 10 users.

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They have some redundant components, usually the disk drive and the high-speed buses for high reliability and network throughput. Examples are AST Manhattan, Compaq ProLiant, Compaq SystemPro, HP NetServer, and IBM Model 195.

- Super Specialized Servers—Dedicated machines that sell for more than $50,000 and are designed for use with mission-critical applications in offices that are replacing applications on mainframe and minicomputers with applications on servers. These applications require 24-hour reliability and as a result, require many redundant components. Examples are NetFrame, IBM Model 295, and Tricord PowerFrame.

Management Concerns and Audit Issues

The following are the major management concerns and audit issues for client/server and distributed processing computing:

- *Combining and Coordinating Products from Multiple Vendors*
Client/server processing can be a combination of hardware and software products from a variety of vendors. Some of these vendors may no longer be in business. Determining which product is faulty when a problem occurs can be difficult and time-consuming.

- *Inadequate Application Programs*
Application programs for client/server computers must be able to both process work as a client and also process information requests from other computers as a server.

- *Network Reliability, Connectivity, Integration, and Interoperability*
Network software may lose data when processing occurs. Connecting one network to another network (connectivity) can be a problem if one network is using vendor X's network software and another network is using vendor Y's network software. When a problem occurs, it may be difficult to determine which network software is at fault.

- *Training End Users and the Learning Curve*
As with any new technology, training is necessary. Training can take place either in a formal classroom setting or in an informal one-on-one setting. If the documentation for the network software and the network applications is technically complex or poorly written, the learning curve can be very steep, and implementation can be very costly.

- *Security over Files and Users*
Many organizations that have elaborate security over mainframe and minicomputers have little or no security over client/server applications. The same data that is tightly controlled and protected on the mainframe and minicomputer is unprotected once it is placed in a client/server or LAN environment.

Audit Implications

The auditor should consider the potential opportunities for processing errors to occur in client/server and distributed processing environments. Situations such as the following might encourage processing errors:

- Hardware and software components from different vendors are frequently linked together, and incompatibilities may exist that are not easily identified. For example, a user-written macro for one spreadsheet system may not produce exactly the same results for all input data when converted to run on a second spreadsheet system.

- The users developing portions or all of these systems will not necessarily have systems development experience or an understanding of proper design and implementation of internal accounting controls, especially when these may need to be programmed into the system. Subtle and undetected design and implementation errors may occur; program and system testing may be much less comprehensive than in a formal systems development environment; and the controls to prevent, or detect and report, resulting errors may be missing or ineffective.

- Security (access control) is more difficult to implement in these environments because tools equivalent to those traditionally used in mainframe and midsized computer environments do not exist. Moreover, end users typically do not see the importance of making effective use of those capabilities available for client/server and distributed systems. Thus, it is more difficult to gain assurance of effective segregation of incompatible duties. It is also more difficult to gain assurance of systems and data integrity, as the lack of security enables users to modify systems and data without creating an audit trail. Even well-intentioned changes to a database definition or a spreadsheet macro may result in processing errors that will not always be noticed by users.

- Backup and recovery procedures, which are usually an integral part of processing procedures in the traditional data center, may be poorly designed and implemented, and may not be operating consistently and effectively in the user environment. System failures or disk read errors may result in lost data that is not fully recoverable.

If the auditor determines that the systems and data in a client/server or distributed environment will be material to the audit objectives, the auditor may want to consider procedures such as the following:

- Gain an understanding, through review of available documentation and interviews with users, of the system processing and the controls performed by the system programs and those performed by the users. Document this understand-

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ing to the extent needed to fulfill audit requirements.

- Determine whether user controls over the systems and data are adequate for the auditor to place reliance on the consistency and integrity of processing throughout the period to be audited—i.e., is there a basis for reasonable assurance that no "unknown" changes have occurred? If the auditor cannot find a basis for reliance, this may impact his or her ability to test system data at a point in time during the year and place reliance on controls to conclude on year-end results.

- Assess the extent of exposure to risks (opportunities for error discussed above), and assess any controls that are in place to mitigate these risks.

- Consider controls over the results of processing, if any, that might exist outside the user area to detect and correct errors—such as reconciliations or balancing to externally derived totals.

- If the auditor, based on these assessments, decides to assess control risk at less than maximum, design and perform tests of controls that will support this decision.

Conclusion

Client/server applications and distributed processing will be adopted by many organizations because of the return of control over information to the user and the possibility of lower data processing costs. The major challenge for the auditor will be to determine that all of the data that has been processed has flowed correctly through the various networks and application programs into the general ledger and the financial statements. Many of the traditional audit tests will still be performed, but they must be adjusted to this new environment. This will not be an easy task, but the adjustment must be made.

Editor's Note: For further information on client/server computing, please take a look at the AICPA Information Technology Division's ***Technology Bulletin****—Client/Server Computing and Cooperative Processing (#043006). Members of the IT Section received this publication free of charge. Additional copies may be purchased from the AICPA Order Department for $17.00 by calling 1 (800) 862-4272. Special thanks to David A. Haeckel, CPA, of Arthur Andersen for his contribution to this article.* **IT**

Reengineering Accounting Systems

By Daniel E. O'Leary, CPA

Dan is on the faculty of the School of Accounting at the University of Southern California and is a former member of the AICPA Information Technology Research Subcommittee. Ford, IBM, and others have recently made major changes to their accounting and financial systems through reengineering. In Part One of this article, (included here), the author discusses some accounting systems that have been reengineered and looks at the issue of when to reengineer. In Part Two, to appear in the Fall '95 issue, the author looks at approaches to reengineering and the impact on controls, external sources, accountants, and auditors.

Reengineering Defined

Reengineering was defined by Hammer and Champy in *Reengineering the Corporation: A Manifesto for Business Revolution* [1993] as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed." Reengineering contrasts with automation which is the process of computerizing an existing process. In general, reengineering changes the process; automation leaves the initial process relatively intact. Although reengineering is increasingly found in conjunction with automation, the occurrence of one does not mandate the other.

Recently, reports have surfaced of reengineering in accounting systems at large corporations, such as Ford and IBM. Ford (Hammer [1990]) reportedly made basic changes in their accounts payable system resulting in substantial manpower savings. IBM (Andors et al. [1992]) also has made changes in their accounting system resulting in substantial changes in manpower and in individual time and expense reporting.

These changes are likely transferable to other firms. In addition, firms that transact with Ford ultimately must make basic changes to their own systems in order to respond to the changes at Ford. As a result, the impact of reengineering on accounting systems is broad-based. The purpose of this article is to explore issues such as when systems need to be reengineered, how to approach the process of reengineering, and what some of the primary issues facing accountants in the reengineering of accounting systems are.

Some Systems That Have Been Reengineered

Among the more notable examples of reengineering that have appeared in the literature have been the cases of Ford and IBM.

Ford

The classic accounts payable process requires that the accounting department match a purchase order, receiving document and invoice in order to make a payment. Generally, the purchasing department generates the purchase order and in addition to keeping a copy, ships a copy of it to accounting and receiving. When the goods arrive, the receiving dock creates a receiving memo indicating that the goods have arrived. That memo is then sent to accounting and to inventory. When the goods have been sent, the vendor creates an invoice and then sends it to accounting for payment. This process is summarized in figure 1, below.

When Ford reengineered its accounts payable process, it eliminated the need for an invoice, integrated operations into accounting information generation processes, and implemented the overall design in a computer-based system. At Ford, virtually all information is captured in a computer database. Accounting does not get paper documents. Instead, all data flows are through the computer.

When Ford eliminated the use of the invoice, they eliminated the need for adding invoice information to the database. The elimination of the invoice also removed one of the pieces of information that needed to be matched. Now, the purchase order and the receiving memo provide the two (not three) sources of information that must be matched. Since there may be errors in invoices, eliminating invoices eliminates some of the matching problems. As a result, much of the matching is now done by computer at the time the goods arrive. Further, now payment is made at the time the goods are received and not when the invoice is received. Any discrepancies are handled by a substantially reduced accounts payable staff. This process is summarized in figure 2, on next page.

Accounting and data entry do not input the information to the computer. Instead, the information is captured at the source of the transaction, from operations. The purchasing department inputs purchasing information, and the receiving dock inputs receiving information.

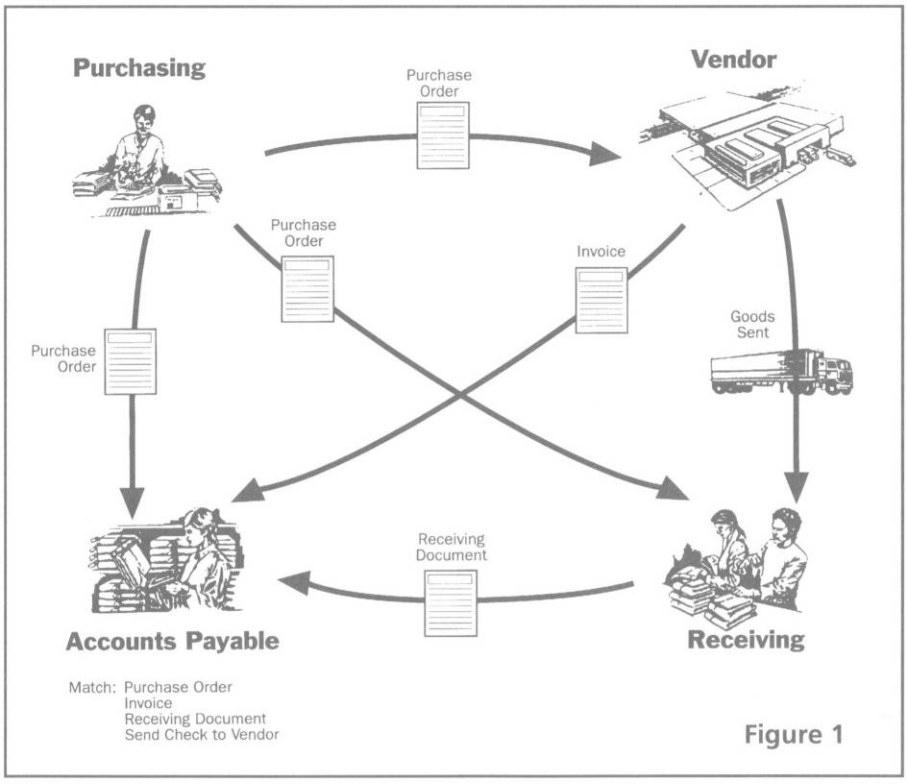

Figure 1

IBM

IBM has reengineered its accounting systems worldwide. The time and expense reporting subsystem has been discussed in the literature (e.g., Andros [1992]): National Employee Disbursement Strategy (NEDS). Initially, the system was characterized by the following sequence of events: that an employee got a form, completed the form, mailed the form, that the secretary received the form, the manager signed and approved the form, the secretary received the form from the manager, the secretary mailed the form, an accountant reviewed and submitted the form, the form was keyed, and finally that a check was generated.

Under the reengineered system, the employee signs onto the computer, completes the form, and electronically signs the form. Then the manager reviews, approves, and electronically signs the form. After a computer-based edit, the funds are transferred electronically.

As a result, the secretary and the mailman are eliminated from the process. In addition, there are now neither paper flow nor physical signatures. Instead, the information flows to a database, and signatures are electronic.

Why Firms Don't Change Their Accounting Systems

If Ford can eliminate the invoice, then why have firms kept invoices as a part of the accounts payable process for so long? Further, why do many (practically all) firms still use invoices? If IBM can eliminate the hard-copy signature of the supervisor, then why do other accounting systems require the signature (on paper) of the supervisor?

There are probably a number of reasons. First, habit or doing what others do, may be the most important rea-

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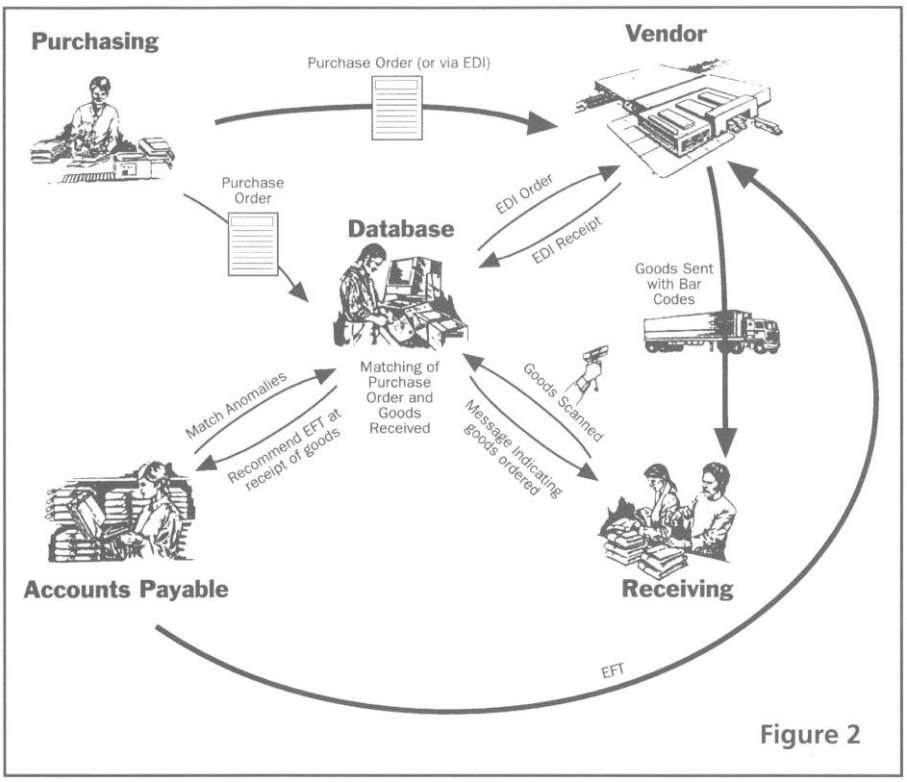

Figure 2

son. After all, it has not been until the recent emphasis on reengineering that changing the accounts payable process has gotten attention. Unfortunately, habit can be quite costly.

Second, auditors like the additional information associated with external and physical documents. Invoices may make auditors' information more certain, since the invoices provide the vendor's view of amount owed, etc. A written signature can be seen and touched. Unfortunately, however, the generation of physical evidence slows the process.

Third, as long as there was no international comparison, there was no impetus for Ford to reengineer its accounts payable process. With the increase of global competition, firms may be more likely to question many of their basic business processes in order to generate gains in nonproduction productivity (*Business Week* [1993]).

What Other Accounting Processes Can Be Reengineered?

If Ford can reengineer the accounts payable process and IBM can reengineer the time and expense reporting processes, then what other accounting processes can be similarly reengineered? How do we know when it is time to reengineer an accounting process? What signals does a process provide to indicate that there is a need for reengineering?

When to Reengineer?

There are a number of signals that indicate when it is time to reengineer a process, as the following section shows. Ultimately, however, a cost-benefit analysis can best determine when reengineering can and should be implemented.

- *Current Systems Are Too Costly.* When Ford first investigated changing the accounts payable system, they had anticipated a 20% reduction in personnel. At the same time, they found that Mazda's accounts payable department had far fewer people (Hammer [1990]). After accounting for the size of the two corporations, Ford's accounts payable department was still far too large. In this case, the extensive difference in the size of a competitors' accounts payable department signaled the need to reengineer the process.

- *Current Systems Do Not Provide the Desired Value Creation Capabilities.* Accounting systems may not be providing the value creation that is desired. For example, accounting systems should facilitate analysis of those variances that affect value creation. Further, to create value, accounting systems should provide timely results in order to allow monitoring of actual and planned results. In addition, in order to create value, accounting control systems need to provide information about cash flows. To the extent that accounting systems do not provide this information, those same systems do not create value, and may actually inhibit value creation. Such a lack of value creation can indicate that accounting systems need to be reengineered.

- *Availability of New Technology.* As technology becomes available, it may be helpful to introduce that technology into a given accounting system. Perhaps the most visible example is that of computer systems, databases, etc. Ford was able to capture the information regarding accounts payable at the source because computer technology facilitated placement of computers throughout the firm. IBM's reengineering was accomplished through integrating flows of information using technology.

  Other technologies have also been important contributors to processes of reengineering. For example, as noted in a 1993 *Business Week* article, Frank's Nursery uses scanners to keep the inventory fresh. Store clerks used to record the status of thousands of plants and craft items daily. Scanners were then utilized to read universal product code labels.

As a result, paperwork was eliminated and inventory could be replenished in real time.

- *New Information Becomes Available.* Technology changes in other functional areas may increase the flow of available information in accounting systems. As in the above example, scanner data has improved the timeliness of a greater quantity of inventory information. Such data may be important to reengineering inventory ordering systems or to reengineering the way a firm captures and summarizes inventory information.

- *Systems Fail to Keep Up.* In some situations, systems have failed to keep up with the demands made upon them. Perhaps one of the more recent reengineering efforts has been in the area of inventory systems. Ultimately, just-in-time (JIT) inventory systems are reengineered inventory systems. The original inventory systems could not keep up with real-time inventory requirements. As a result, the inventory system had to be completely reengineered incorporating JIT.

- *Changing Environmental Constraints.* As the environment changes, new information becomes available. For example, a change in accounting practices, resulting from statements by either the Security and Exchange Commission or the Financial Accounting Standards Board, can change the information that is available or required. Changes to information requirements may necessitate the reengineering of accounting systems to ensure that the appropriate information is gathered.

- *Accounting Controls Are No Longer Effective.* As technology is gradually introduced into accounting processes, previously effective controls may no longer be useful. For example, with the computerization of various processes, there may be a loss of the controls associated with the separation of duties. As a result, it may be necessary to reengineer the controls and the process so that the appropriate level of oversight is maintained.

- *Systems Fail.* Perhaps the most visible sign that a process needs to be reengineered is when a system fails. Generally, such system failures result because the systems do not meet the needs of the users or because they do not provide timely information. At any rate, if a system is not used, it is a failure. If a parallel manual system is developed and used instead, or if no system is used, then the system has also failed.

  A classic example of system failure is the case of a financial planning expert system that was bundled with workstation hardware at a British bank. The software was initially designed to point to stocks that were particularly "good buys." However, it was found that the system responded to general market trends, not firm-specific trends. Thus, when one stock dropped, many other stocks dropped. When one stock rose, many other stocks rose. When the author visited the facility, the workstations were not even plugged in. Clearly, such a system would need to be reengineered before it would be usable.

In the Fall '95 issue, we will continue with our discussion of Reengineering Accounting Systems as we focus on the approaches to reengineering and the impact on controls, external sources, accountants, and auditors.

IT

Facing The Millennium

by Phil Friedlander, CPA

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What would you do if one day you woke up, went to work and found out things had changed at the office? What if all of your previously slow paying, always-120-days-in-arrears clients suddenly became current overnight? Would you jump for joy or think you were dreaming?

Before you get too overjoyed or pinch yourself, you better check the calendar. If the date is January 1, 2000, you've probably got a big problem. On that date, many computerized systems will begin to deliver wrong answers on date calculations. This is due to the way computer applications have been traditionally designed. Up until a few years ago, it was very common for people writing computer applications to store dates in one of two formats:

- yymmdd (year, month, day—two digits each), or

- Julian format (yyddd—comprised of a two digit year and the day of the year, based on 365 days)

Both of these formats assume that the first two digits of the year are "19," as they always have been since computer systems were first designed. Once that isn't true anymore, starting on January 1, 2000, calculations will start to go wrong. Let's take an example.

An invoice dated November 1, 1999, is 60 days old on December

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31, 1999, because the computer calculates the age as: [(today's year−invoice year) × 365] + [(today's month−invoice month) × 30] + (today's day−invoice day) or [(99−99) × 365] + [(12−11) × 30] + (31−1) = 60. Note that this example is not the most accurate way to calculate a date but it is used here for simplicity's sake.

On January 1, 2000, the calculation will be [(00−99) × 365] + [(1−11) × 30] + 1−1 = -36,435 days. Another way of viewing this is that the invoice now looks like it has approximately 99 years and 10 months before it is due, making it current.

The Gartner Group believes that 20 percent of business applications will fail because of invalid date computations in 1995; without corrective measures, this number will increase to more that 90 percent by 1999. Although this problem has implications for the entire IT industry, the majority of the problems lie in the legacy mainframe computer systems. This is because it was these systems, dating back to when data storage was extremely expensive, that attempted to squeeze out every extra byte of storage by not storing the first two digits of the year.

The Solution

There are two basic ways to solve this problem:

1. Store the first two digits of the year in the date (i.e. YYYYMMDD)

2. Change the calculation to adjust if the answer produces a highly negative number, as in the example above.

While this sounds easy, the Gartner Group estimates that the average cost of addressing this issue (reviewing and correcting each program) will cost from $450 to $600 per program. Assuming that the average medium-sized company has approximately 8,000 programs that support business operations, this extends to a cost of between $3.6 to $4.8 million.

The good news is that most of the commercially available systems produced in the past few years have already been programmed for the millennium. However, many of the older ones have not. The I/S professional should check all of the applications systems in use (tax, accounting, write-up, billing, etc.) and make sure that the system can handle the turn of the century. The I/S professionals should also have their system users verify this for all in-house systems.

IT

Network Security

By Steven W. Bare, CPA, and Gerhard H. Steinke, Ph.D.

Steve Bare is president of Savannah Software Company in Yorktown, Indiana, and a member of the AICPA Information Technology Practices Subcommittee. Gary Steinke is Associate Professor of Management and Information Systems at Seattle Pacific University. In this article, they discuss basic network security procedures.

In our experience, attitudes toward personal computer (PC) network security are different from attitudes toward mini-computer or mainframe computer security. This is natural, we suppose, given the way networks found their way into most organizations. Many companies first purchased one personal computer and added more as they were needed. Because limited data were stored there, and because only a few people used it, security could be managed by controlling physical access to the PC and by copying data from the computer's hard drive to other media for backup.

As PC use grew, users wanted to share expensive network devices such as laser printers and hard drives as well as data. The local area network was a common approach. Security practices were based on a single user PC environment and generally only expanded to include passwords which were required to access the network. In many cases, managing the network was not a full-time job. The extra duties were assigned to a trusted, capable employee who already had plenty to do.

Mini-computer security, on the other hand, evolved from mainframe computer security. Organizations which invested large amounts of money in computer resources tended to be very careful about computer security. Formal security measures were used. The computers were physically secure in specially built rooms, and they were attended by highly trained staff.

So what level of security is adequate for a local area network? Let's look briefly at what it should include. Bear in mind the cost of these measures versus the benefit. Think about the "value" of the data to be secured and what it would cost if you lost it, or if someone stole it. Tax returns, financial statements, customer lists, manufacturing bills of material, and payroll information are probably important to you; routine correspondence may not be.

Network security is administered on four levels: login security, rights security, attribute security, and file server security. We briefly discuss these in the context of Novell NetWare security and then review the recommended settings for Novell's NetWare. These general guidelines apply to other network operating systems as well.

Login Security

The purpose of login security is to identify and authenticate users. In order to access the system, users are required to enter a user identification —also known as a login ID. The network operating system reads the user's login ID, checks to see if it is valid, and ascertains whether there is a password for the account.

Passwords should be required for all users. A good password should contain a combination of numbers, letters, and special characters. It should not be the user's name, initials, spouse's name, employee number, or anything else that would be too easily guessed. It should also not be on a post-it note attached to the user's workstation.

Login IDs (or passwords) for users who have resigned or have been fired should be changed or deleted as soon as possible.

Passwords should meet other criteria which are detailed in the listing of recommended settings for Novell Netware included below. These recommendations would apply to other network operating systems as well.

Rights Security

Users are granted rights that determine what they can do on the local area network. Rights granted to users include the right to read (execute), write, create, erase, modify, scan, control access, and grant rights to others. These rights apply to directories (groups of files) or individual files. It may be helpful to develop a matrix listing users on one axis and applications (which are made up of files located in directories) on the other. Then, for each user, indicate the rights he or she should be granted for each application.

A special class of rights, supervisory rights, gives a user the right to add and delete users, assign rights to others, and control the attributes of network objects such as directories and files. Supervisory rights are generally granted only to the network administrator. The network administrator should not login as supervisor, but should instead have supervisor equivalent rights granted to his/her own login ID. In emergencies, the supervisor login ID can be used to bypass security.

Attribute Security

Directories and files have attributes that determine how they can be used. Attributes include execute only, hidden, indexed, normal, read only, read-write, shareable, system, and transactional.

Rights and attribute security combine to control the user's ability to access directories and files in specific ways. Consider a user who has rights to read and write files in a given directory. When the user encounters a file with the attribute read-only, the user will only be able to read the file—not write to it. This is an important aspect of network security and should be reviewed for each user periodically.

File Server Security

Certain network administration functions can only be performed using the network operating system's file server console. This right should be limited to the network administrator. Additionally, the network administrator can lock the file server keyboard, requiring the correct password to unlock it.

Physical access to the file server should also be restricted. This will prevent someone from turning the system off, destroying data and system files, and/or accessing sensitive information.

Backup

Do not overlook routine backup procedures as an integral part of network security. The ability to restore the network operating system, your programs, and data files when failures occur (you can be sure they will) is important. Also, be sure to store a current set of backup disks or tapes off-site.

Listed below are default settings recommended by Novell. These deal specifically with login security. Rights and attribute security are administered separately.

** The recommended settings are*

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Novell NetWare Default Account Restrictions*

Account Has Expiration Date:	No		
Date Account Expires:	—		
Limit Concurrent Connections:	Yes		
Maximum Connections:	1		
Require Password:	Yes		
Minimum Password Length:	5		
Force Periodic Password Changes:	Yes		
Days Between Forced Changes:	40		
Limit Grace Logins:	Yes		
Grace Logins Allowed:	1		
Require Unique Passwords:	Yes		
Account Balance:	0		
Allow Unlimited Credit:	Yes		
Low Balance Limit:	—		

Intruder Detection/Lockout*

Detect Intruders:	Yes		
Intruder Detection Threshold:	—		
Incorrect Login Attempts:	3		
Bad Login Count Retention Time:	1 Days	0 Hours	0 Minutes
Lock Account After Detection:	Yes		
Length of Account Lockout	7 Days	0 Hours	0 Minutes

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reprinted with permission from "NetWare Security: Configuring and Auditing a Trusted Environment," a research report from Novell's Systems Research Department. For a copy of this report, or the related article "Building and Auditing a Trusted Network Environment with NetWare 4," please call Novell at (800) 377-4136.

IT

Technology Guide Recently Shipped

Just in case you missed it, **Quick Response,** shipped in August 1995, describes the various technologies that support Quick Response along with the benefits to retailers and suppliers for implementing this strategy. Quick Response is a strategy that attempts to best meet the needs of the ultimate consumer by developing new business relationships and utilizing technology in order to get products quickly through the merchandise pipeline. Industries that are part of the pipeline and play a key role in the movement of merchandise include manufacturers, suppliers, warehousers, distributors, and retailers. In order for a company to stay competitive in a global economy, it is critical to identify and meet the changing needs of its customers. Companies that are most effective and efficient at providing a quality product to meet these needs should gain significant advantages over competition and be profitable.

If you didn't get your copy, call Andrew Gioseffi in the Information Technology Membership Section at (212) 596-6020. Additional copies may be ordered from the AICPA Order Department at 1 (800) 862-4272. Product No. 043008: $17.00 *AICPA members; $18.75 nonmembers.*

Gadget of the Quarter: Glidepoint By Cirque: Building a Better Mouse

By Roman H. Kepczyk, CPA

A product that has been on the market for the past year is getting more than second looks from users wanting a better mouse. The Glidepoint by Cirque uses the most familiar pointing device available to us: our finger. It works by sliding and tapping the finger on a small pad that fits easily next to your portable computer or desktop keyboard. The Glidepoint is compact, accurate, low maintenance, and less prone to cause repetitive injuries than the traditional mouse.

Glidepoint was originally designed as a finger pad for portable computers but is rapidly gaining acceptance in the office market with the release of its desktop unit. The portable device measures 3.4 x 2.7 x.5 inches and weighs about 2 ounces. It has two buttons at its base that function like traditional mice but also has a "tap" feature. Users "tap" or "tap and drag" their finger on the pad to click or click and drag the pointer. This "tap" feature sets it apart from other pads on the market that require a manual button to drag the cursor. The desktop unit is slightly larger at 4 x 4.4 x .4 inches and has the two buttons on top of each other for easier left/right button manipulation. Both pads install in seconds by plugging into your standard or PS/2 mouse connector and both use your existing mouse software. After a few minutes of play or execution of the tutorial, using Glidepoint becomes almost second nature.

The technology involved in Glidepoint is called field distortion sensing, which measures the effects of the electromagnetic field given off by the moisture in your finger. It works by "centering" the point where your finger touches the pad and moves as you slide your finger. The pointer picks up wherever you touch the pad, so sweeping movements on the pad are

easy. The accuracy level is down to a pixel so it works extremely well with precise Windows applications. Also, the lighter the touch, the more accurate the movement.

The product retails for $89 but is readily available in the $70 range. Maintenance is non-existent compared to traditional mice (especially those with built in trackballs), as the pad is sealed in a plastic case. Occasional wiping with window cleaner will clean adequately enough and not damage the unit. The pad also comes with an ergonomic rest that makes the Glidepoint comfortable to use with very little stress on your wrist.

As accountants, we can expect to see the product as a standard feature built into portable computers in the future and as a viable alternative to the mouse we see today.

Roman H. Kepczyk is a director with Henry & Horne, P.L.C., in Tempe, Arizona. He is also a member of the AICPA Information Technology Research Subcommittee. IT

InfoROM—No More Books!

By Steven Pynne, CPA

Steve is Manager of the Information Technology Group of Elliott, Davis & Company in Greenville, South Carolina. He is also a member of the AICPA Information Technology Executive Committee. In this article, he discusses the benefits of using InfoROM.

In case you haven't noticed, CPAs have moved from being compliance accountants to being business advisers. More and more, we are receiving calls for assistance with common business problems rather than tax or audit related concerns. One of the most common questions we hear relates to computer system selection. Many times, these questions lead to a complete consulting engagement priced at several thousand dollars. More often than not, the client is looking for alternatives available in the software market. This time, the advisory service is to provide a selection of possible choices for the client to investigate.

But how can we help? It's impossible to keep up with the volumes of tax code, much less the wide variety of general and specialized software available. Let's start with the proper tools. One possible option is InfoROM from ICP, Inc. InfoROM is a database of software product descriptions published in CD-ROM form. Currently, there are almost 16,000 titles in the database, broken down into 400 categories, encompassing approximately 5000 vendors. Each quarter, titles and vendors are added, deleted, and updated.

By now, most CPAs have installed, considered, or at least seen computerized tax research. Software research follows the same pattern of logic. First is the idea—a particular type of software or business. I'll use for my example a country club that wishes to computerize its membership billing and accounting function. First, we will do an "all text" search on the phrase "country club." While the search only yielded four products with the phrase "country club" somewhere in the description, it provided the location of all of the software titles designed for a membership club—specifically in the category of Consumer/Service/Distribution Industries–Leisure Sports Industries–Club Membership Management. At this point, I modify my search to use the Consumer/Service/Distribution Industries category, looking for the word "club." This time there are 22 products that might meet my needs. A quick glance at each of the product descriptions gives me several that may meet my client's needs. A phone call later in the day with names, addresses, and phone numbers of possible systems should impress my client. Total time spent on the client—under 15 minutes. The billing? Well, that's up to you, but remember that this is premium service. The client would have spent hours looking for the same information.

Many of the vendors that list their products on InfoROM also provide additional product information in the form of digital presentations, product demos, or scanned brochures. This additional information is stored in a separate database under the "List of Advertisers" option. There is also a small section of "Private" databases that deal with a specific vendor's offering of software.

InfoROM is published quarterly—spring, summer, fall and winter. It is a Windows-based program that requires a system that runs Windows efficiently. A regular subscription to InfoROM is $99 for one CD release per year, or $296 for the quarterly releases. Members of the AICPA Information Technology Section are eligible for a special price of $125 per year for the quarterly releases. You can contact ICP directly at 1-800-428-6179. You can easily recover the cost of this product in one or two searches for your clients. Another option available is to access ICP's SoftInfo on the Internet.

However, InfoROM is not without its problems. InfoROM classifies products into categories, sub-categories, and sometimes even sub-sub-categories. Unfortunately, you cannot see all the products in a specific sub or sub-sub category.

For the practitioner who does the occasional search for a client or for him- or herself, InfoROM should be more than adequate. For the full-time computer consultant, however, other tools should be considered for example, ComputerSelect from the Computer Library or Datapro on CD from Datapro Information Services Group. But be advised these products carry price tags up to ten times the price of InfoROM. **IT**

ICP Software Information Center Now Available On the Internet

ICP has recently announced that its product, *SoftInfo* (http://www.icp.com/softinfo/), which contains information on more than 16,500 software products from over 4,500 vendors, is now available on the Internet.

SoftInfo contains company profiles that detail software supplier specialties in business and industry, as well as telephone and fax numbers, and a live e-mail connection for buyers to contact vendors right from their screens. Product descriptions give detailed feature-function-platform information. Some vendors have their own "Home Pages," or Internet residence, and can be linked directly through *SoftInfo*.

We Want Your Feedback!!

In or around February 1995, as a member of the Information Technology Section, you were sent a catalog from ***Accountants Compleat*** offering PC products and accounting software at what we thought to be very competitive prices. We offered the catalog as part of our member benefits package and quite frankly, we were surprised that a larger number of you didn't respond. Recognizing that there are a myriad of good reasons for not ordering from any given catalog, we would still like to know what you thought about the catalog so that we can focus our efforts to provide benefits that will be meaningful to you. Below are a list of possible reasons for the lack of response to our catalog offering. Please indicate which reason(s) apply to you. Feel free to offer any additional information in the space provided. You may fax us back with your response at (212) 596-6024. Please take this opportunity to provide the feedback we need in order to serve you better.

☐ I used the catalog. I thought it was a good benefit.

☐ I don't buy products from this type of catalog.

☐ I did not see this catalog or recognize that it was affiliated with the AICPA.

☐ I saw the catalog; however, the prices were no better than I can get elsewhere.

☐ This type of service is not a useful membership benefit to me.

☐ Other comment(s)—

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InfoTech UPDATE