TRAINING

INTRODUCTION

In addition to being an important factor in the successful implementation of a Client/ Server system, training makes employees aware of security concerns. It also educates employees for needed behavioural changes to comply with internal controls. Additionally, it provides employees with the basic knowledge to operate well in a new system environment.

User training for a Client/Server system is complicated by the interface of multiple front-end systems with servers. The user-friendly design provides users with a variety of options for their applications. As front-end applications vary, so do the training and technical support needs. Training of programming and support personnel is also complicated because the underlying system is more complex than traditional systems.

To teach the fundamental technologies involved in a modern Client/Server system in an easy manner, so that one can understand the business requirements, design issues, scalability and security issues in an enterprise system. Teaching style is explanation of concepts, supported by hands on examples. Apart from this required training, it needs training for system administrator, database administrator training, end user training. existing training delivery vehicles are being revolutionized using new information and telecommunication systems. Classroom delivery can now take place in a synchronous mode across the entire planet. Trainees can participate in learning activities at any time and location using Internet and satellite technologies. These vehicles are breaking the boundaries of space and time, offering unlimited learning possibilities to organizations and those who work for them.

The effectiveness of training in Client/Server computer application development depends on the combination of instructor-led and team-based learning methods. Ten persons familiar with the course content generated 90 statements and each subsequently, completed a similarity sort of the statements. The concept map showed eleven clusters ranging from contextual supports and general methodology on the top and left, to more specific Client/ Server concepts on the right and bottom. The cluster describing the actual coding and testing of Client/Server applications are very important for training.

One consistent pattern that emerged is that the highest achievement tended to be evidenced in clusters most related to the way the course was taught, a combination of instructor-led and team-based learning. The clusters related to communication, teaming and coaching consistently placed in the top five across all administrations. One implication may be that the training methods used may have been more salient than the content.

TECHNOLOGY BEHIND TRAINING DELIVERY

Traditional Classroom

Most of you are familiar with the traditional face-to-face method of training and learning, given in a classroom or seminar. It is the oldest method for delivering training, and it can still get the job done effectively. In classical training delivery, learners and the instructor are present at the same time. Therefore, classroom training is defined as a synchronous training delivery vehicle. Face-to-face experience provides the trainer

and participant with immediate feedback. It enables participants to discuss and share ideas with others in the classroom or seminar. The trainer presents materials, manages and guides discussion; responsibly ensuring that learning is constructive and positive. Traditional classroom delivery is thus termed teacher centric. The time commitment needed for traditional classroom delivery is increasingly considered a drawback in this kind of approach. With downsizing, rightsizing and outsourcing, there are fewer people with time to sit in a classroom. In addition, staff scheduling is often a nightmare when attendance is low or if the training must be scheduled according to employee commitments.

On-the-Job Training (OTJ)

On-the-job training is also a classical training delivery approach, dating back to the middle ages, when apprenticeship was dominant as a learning form, and little formal training existed. Often one of the most popular training delivery vehicles, OTJ training is frequently confused with informal office discussions, round table exchanges and brainstorming sessions. It is sometimes difficult to precisely define what makes up OTJ training. Frequently your coach, mentor, or trainer has a checklist of items which they must demonstrate to the learner, and validate learner's comprehension. Alternatively, informal styles consist of asking a learner to repeat an activity until the coach, mentor, or trainer is satisfied with the learner's performance.

Video Conferencing

There are many conferencing and virtual meeting tools, but most can be placed in one of two distinct categories: Conference room video conferencing, where two or more groups exchange information using one or two-way visual (image) and two-way audio (voice) transmission. Typically, wired conference rooms are voice activated. The person speaking dominates the audio lines. Students can see the instructor, and the instructor can often view the class groupings, sometimes with the capacity to focus in on the person speaking. Computer conferencing, where exchange information using one way visual (image) and two way (voice) transmission is employed. If all computers are equipped with cameras, peer to peer exchange—such as instructor to student and student to student allows both image and voice exchange. Streaming media technology will increasingly be used internally at companies and in business-to-business ventures and that will drive up corporate spending on the technology. This training delivery vehicle offers a live, immediate and synchronous experience, presenting a good discussion format in real time, with equipment that is relatively easy to operate.

Collaborative Tools

A host of conferencing tools can streamline and enrich a virtual business meeting experience, including, but not limited to, digital video, program and document sharing, and whiteboarding. These tools help the staff to find new ways to learn and collaborate online in real time. Digital whiteboards employ a board, a pen and an eraser to store every word, line and color on the computer. Using an Electronic Projection System (EPS), trainer can share this information electronically over the network with learners, creating an electronic flipchart in real time. In collaborative systems, learners can add comments to the flipchart that are visible to all session participants.

Virtual Groups and Event Calls

Computer technology allows training by using virtual groups in a cheap, accessible and easy-to-use fashion. Set up chat rooms where learning groups can discuss, debate and share information after training content has been distributed. Chat groups lack the face-to face element and can be asynchronous if members are not asked to be simultaneously available. Voice intonation and body language cannot guide the learners. Virtual groups should be managed, focused and kept small, since superficial treatment of materials can be frustrating to learners. Some computers may be slower than others, so delays in communication should be expected. Other virtual groups include virtual office sites, where members of a company can interact using a computer, Web cam and modem to conduct meetings from any geographical location in the world. Event call training involves use of the telephone only rather than the computer. Training materials are often sent to event call locations in advance, and are delivered one-way by the instructor. Participants in many locations, connected via telephone conference, can ask questions. Again, telephone event calling offers no face-to-face element. However, it serves as an inexpensive, quick way to diffuse a uniform message to staff in different locations.

E-Learning

E-learning is the hot word on the block in training and investment circles. The term is elusive, and means something a little different to everyone. In terms of learning delivery approach e-learning is asynchronous: the learner does not receive instruction in the presence of an instructor or other students. The learner can repeat a lesson as many times as he needs, extracting the parts of the course he requires without wasting time going through material he has already mastered. Learners can proceed through an electronic program at their own pace, stopping and starting as desired. E-learning can be designed to offer different levels of complexity, targeting a wider training audience and customizing training accordingly. E-learning encompasses Computer Based Training (CBT), using a computer in combination with Compact Disks with Read-Only Memory (CD-ROMs), Digital Video Disks (DVDs) or browser driven, Web-Based Training (WBT). E-learning can be networked or single user based. E-learning vehicles depend on the technology available and bandwidth capacity. Lower bandwidth means that fewer graphic, animation, sound and video elements are possible.

Web-based Training

Web-based training is browser driven. For this reason, it is more accessible to many, but expensive for some because the Internet access is charged by the minute. Accessibility to e-learning "is not currently as integral as an employee manual, a college syllabus or a 9th grade math textbook. Most industry observers and education practitioners believe that one day soon, it will be. Web-based content can be easily changed or updated so that learners receive the most recent version. When training is complete, feedback in the form of test or quiz results can be given online and stored in databases or Learning Management Systems. Instructor feedback and follow-up can take the form of online chat rooms or e-mail. Universal accessibility to the Web might require using limited bandwidth, which results in slower performance for sound and images. Avoid long downloading delays, since this can be a source of frustration for users. This module is a sample of low bandwidth, interactive, Web-based solution.

Learning Management Systems (LMS)

Learning Management Systems have been developed to record learner progress in computer and Web-based training. Some systems incorporate both asynchronous and synchronous training. Features generally include coordinating course registration, scheduling, tracking, assessment and testing learners while reporting to managers. Many systems interface with human resource development and enterprise wide systems. Learning Management Systems track and manage the learning process for each user. Some contain course and knowledge management modules. These are termed learning course management systems. There are approximately 600 currently on the market. Learning Management Systems can consume much of an infrastructure budget, so careful consideration should be given before selecting one. Another negative impact of implementing an LMS is that learners may feel policed This may reduce learners' willingness to use this type of e-learning product.

Electronic Performance Support Systems (EPSS)

An Electronic Performance Support System provides task specific information, training, coaching, and monitoring to enhance job performance. The key to good EPSS tools is their simplicity and accuracy. An EPSS can be in the form of help files, glossary items, and task tools available on the Internet, or in print. EPSSs are concise, efficient to use, and provide clarification on tasks and procedures. An EPSS is part online help, part online tutorial, part database, part application program, and part expert system. In short, an EPSS is an integrated version of a lot of products that technical communicators produce. It is "an electronic system that directly supports a worker's performance when, how, and where the support is needed."

TO WHOM TRAINING IS REQUIRED?

System Administrator Training

System administrator is the person in Client/Server environment, who understands the availability of resources desired by client. He must understand the level of system performance and ease of use their users requirement. System Administrator concentrates on tasks that are independent of the applications running on adaptive server; he or she is likely to be the person with the best overview of all the applications. System administrator is responsible for managing server, client and as well as about all the applications running in the environment. Some of the important system administrator's tasks on that management must concentrate to prove sufficient training to system administrator.

1. Setting up and managing client server database, managing and monitoring the use of disk space, memory, and connections, backing up and restoring databases server, integration with back-end databases.
2. Setting up and managing user accounts, granting roles and permissions to Adaptive server users and managing remote access.
3. Working with various control panels and hosting automation software and also day to-day management of the equipment.
4. Diagnosing system problems along with fault management and performance management.

DBA Training

Client/Server environment consists of centralized or distributed data, so database administrator requires additional responsibilities. He must perform skilled operations with the help of technical staff while operating the application running on client server model. The additional complexity of the new environment requires some new training for database administration staff in that case design of Client/Server environment plays an important role in effecting the performance due to location of data. Here, Database Administrator (DBA) is an experienced senior member(s) of the computing staff who plan and co-ordinate the development and daily maintenance of the entire database environment. He has an extensive working knowledge of Client/Server environment. Usually the role of DBA is shared between 2 or 3 such employees for security purposes. A typical DBA's duties include:

- ✓ Installing and configuring the DBMS.
- ✓ Assisting in the implementation of information systems.
- ✓ Monitoring the performance of the database and tuning the DBMS for optimal performance.
- ✓ Ensuring data integrity is maintained and appropriate backups are made.
- ✓ Resource usage monitoring.
- ✓ Setting standards for system documentation.
- ✓ Facilitating end-users with required database facilities.
- ✓ Overseeing new database developments, database re-organisation.
- ✓ Maintaining an acceptable level of technical performance for database utilities.
- ✓ Educating the organization in the use, capabilities and availability of the database.

In other words, DBA prime basic duties are to manage administrative procedures like installation and configuration, backup, recovery, security administration and performance
tuning that covers application, database, Client/Server, parallel, restructuring, crisis management, corruption repairs, long running and platform specific tuning.

Network Administrator Training

Network administrators training program specifically focuses on the design, installation, maintenance and management as well as implementation, and operating network services on LAN (Local-Area Network), WAN (Wide-Area Network), network segment, Internet, intranet of Client/Server system. The increasing decentralizes activities of network services makes coordinated network management difficult. To manage a network, let us see what the basic fundamentals are associated with a network management system. Basically, network management system is a collection of application, software, hardware and some tools for monitoring and controlling the system integration. Then training of Network System Administrator requires training of following important areas like:

- ✓ Configuration management.
- ✓ Performance management.
- ✓ Accounting management.
- ✓ Security management.
- ✓ Fault management.

We can say, Network Systems Administrator are responsible for ensuring an organization's networks are used efficiently under the Client/Server environment. They provide day-to-day administrative support, monitor systems and make adjustments as necessary, and trouble-shoot problems reported by client and automated monitoring systems. They also gather data regarding customer needs, and then evaluate their systems based on those needs. In addition, they may also be involved in the planning and implementation of network security systems.

End-User and Technical Staff Training

End user's are the user's of Client/Server environment those how are already having sufficient knowledge about application running on the system. They are not technical persons but having enough function knowledge of system. They need to train about some new standards and functionality and technology of the applications being implemented in the system.

Technological component constituting the Client/Server system must be completely known to the supporting staff. There must a interface between high level administration and technical staff so that database access and communication technologies can be used in maximum potential by any client. Technical staff must be trained to respect the technological knowledge of user who is already familiar with existing system. The technical staff is the middle level of user of client server applications, then their corporate experience counts while a major fault occurs with system.

GUI Applications Training

Most clients in Client/Server systems deliver system functionality using a Graphical User Interface (GUI). When testing complete systems, the tester must grapple with the additional functionality provided by the GUI. GUIs have become the established alternative to traditional forms-based user interfaces. GUIs are the assumed user interface for virtually all systems development using modern technologies. There are several reasons why GUIs have become so popular that includes:

- ✓ GUIs provide the standard look and feel of a client operating system.
- ✓ GUIs are so flexible that they can be used in most application areas.
- ✓ The GUI provides seamless integration of custom and package applications.
- ✓ The user has a choice of using the keyboard or a mouse device.
- ✓ The user has a more natural interface to applications: multiple windows can be visible simultaneously, so user understanding is improved.
- ✓ The user is in control: screens can be accessed in the sequence the user wants at will.
- ✓ The most obvious characteristic of GUI applications is the fact that the GUI allows multiple windows to be displayed at the same time. Displayed windows are 'owned' by applications and of course, there may be more than one application active at the same time.

Windows provide forms-like functionality with fields in which text or numeric data can be entered. But GUIs introduce additional objects such as radio buttons, scrolling lists, check boxes and other graphics that may be displayed or directly manipulated. The GUI itself manages the simultaneous presentation of multiple applications and windows. Hidden windows in the same or different applications may be brought forward and used. There are few, if any, constraints on the order in which users access GUI windows so users are free to use the features of the system in the way they prefer, rather than

the way the developers architected it. However, the sophistication and simplicity of a GUI hides the complexity from the user and where development frameworks are used, the programmers too. When trainers are presented with a GUI application to train, the hidden complexities become all too obvious. Consequently, training GUIs is made considerably more difficult.

There are some key points that must be taken care while providing training to the various applications on Client/Server environment, in fact, these are the difficulties associated with GUI training.

- ✓ Event-driven nature: The event-driven nature of GUIs presents the first serious training difficulty. Because users may click on any pixel on the screen, there are many, many more possible user inputs that can occur. The user has an extremely wide choice of actions. At any point in the application, the users may click on any field or object within a window. They may bring another window in the same application to the front and access that. The window may be owned by another application. The user may choose to access an operating system component directly e.g., a system configuration control panel.
- ✓ Unsolicited events: Unsolicited events cause problems for trainers. A trivial example would be when a local printer goes off-line, and the operating system puts up a dialog box inviting the user to feed more paper into the printer. A more complicated situation arises where message-oriented middleware might dispatch a message (an event) to remind the client application to redraw a diagram on screen, or refresh a display of records from a database that has changed. Unsolicited events may occur at any time, so again, the number of different situations that the code must accommodate is extremely high. Training of unsolicited events is difficult.
- ✓ Hidden synchronization and dependencies: It is common for window objects to have some form of synchronization implemented. For example, if a check box is set to true, a text box intended to accept a numeric value elsewhere in the window may be made inactive or invisible. If a particular radio button is clicked, a different validation rule might be used for a data field elsewhere on the window. Synchronization between objects need not be restricted to object in the same window and its training must be done carefully.
- ✓ 'Infinite' input domain: On any GUI application, the user has complete freedom to click with the mouse-pointing device anywhere on the window that has the focus. Although objects in windows have a default tab order, the user may choose to enter data values by clicking on an object and then entering data. Many ways in, many ways out: An obvious consequence of the event-driven nature of GUIs is that for most situations in the application, there may be 'many ways in' by which the user reached that point in the application. As many as possible, the ways must be known to the user.
- ✓ Window management: In a GUI environment, users take the standard features of window management and control for granted. These features include window movement, resizing, maximization, minimization and closure. These are usually implemented by standard buttons and keyboard commands available on every window. The trainer has control over which standard window controls are available, but although the operating system handles the window's behavior, the trainer must handle the impact on the application.

LAN/WAN Administration and Training Issues

For LAN administration there are various products available such as Network General Sniffer that enables administrator to monitor the network for capacity and problems without the need for detail knowledge of the applications. The biggest advantage of using such software is that they can be used to monitor LAN traffic, analyzing the data, and then to recommend actions based on data assessment. The software interpreter internal LAN message formats for LAN administrator to take action based on recommendations without the need for detailed knowledge of such message formats.
Before starting the training of any client/server system, the environment of system must be clearly known to administrator. Administrator must understand naming, security, help procedure etc., and able to implement them uniformly between applications and procedures.

In case of large systems that are located in wide areas it requires administrator training as well as user training. Such training ensures that each of the installation operates in the same ways and also the support personal at remote can communicate with local administrator. All the software products should be installed on the entire client with uniform default setting and also the administrator should be an expert in the use of the product. Training document of product usage also reveals that the administrator must understand, what the product requirements are? And arrange to have temporary and backup files created on volumes that can be cleaned up regularly.

WAN administrator must be trained in such a way that he can use and manage the remote management tools. Such tools enable administrator to remotely manage the LAN to WAN environment needed for many client/server applications. All the WAN network issues associated with remote terminal access to host system exist in the client/server to WAN access. Complexities arise when data is distributed to the remote LAN. The distributed application programs to remote servers present many of the same problems as do distributed databases. Then, the administrator must be trained in the software and in procedures to handle network definition, network management and remote backup and recovery.

Due to wide impact of the WAN on communication issues, training developers in WAN issues becomes critical. And also due to availability of many optional configuration WAN's are complex to understand and optimized. Then the training of WAN administrators to understand all of the options available to establish an optional topology becomes more expensive. In client/server application administrator must be expert in the operating system used by clients and servers. The network used in client/server implementations frequently runs several operating systems. Such diversity of platforms changes the administrator to have expertise not only in the particular of a single operating system but also in the interaction of the various operating systems. While designing and planning for a new client/server application, the training requirements should be considered carefully before an organization establishes too many operating systems on the network. The cost and implications of training in this area must not be overlooked.

IMPACT OF TECHNOLOGY ON TRAINING

Client/Server Systems were initially developed as a cost-effective alternative to hosting business applications on Mainframes. Client/Server Systems offer many advantages over traditional systems such as low cost, increased performance and reliability due to a distributed design, and easier interoperability with other systems etc. Over the last decade, the second generation of Client/Server Systems has seen a major technological evolution. The earlier Client/Server Systems based on the two-tier database centric design have evolved to incorporate middleware technologies (for application logic) such as CORBA, COM+ and EJBs in an N-tier architecture. These technologies provide enhanced scalability and robustness to the business application. In the last few years, the Client/Server applications have been web-enabled for easier access and manageability. The integration of web and Client/Server technologies has given rise to important applications such as Data Warehousing, Online Analytical Processing (OLAP) and Data Mining. The necessities to integrate and exchange information with other business systems have led to the recent development of "Web Services" using XML and SOAP protocols. And of course, with web enabling, the security issues with Client/Server computing have become more important than ever. There are a number of factors driving the education and training markets to increase the use of technology for learning delivery:
Technical obstacles in adoption are falling: Network and system infrastructures, hardware access, and limited bandwidth are rapidly becoming non-factors.
Penetration of the Internet: The pervasiveness and familiarity of the Internet and its related technologies is the number one driver behind the growth of e-learning.
Market consolidation and one-stop shopping: Corporations, educational institutions and students are increasingly demanding more of their educational providers.
Traditional players looking to get on the scene: Many big industries
Knowledge is the competitive weapon of the 21st century: Knowledge is now the asset that will make or break a company. To remain competitive, corporations and individuals themselves–are expected to increase the amount spent on education to increase the value of their human capital.

Client/Server Administration and Management
Administration and management of Client/Server environments is an important and challenging area. Client/Server administration includes a range of activities: software distribution and version management, resource utilization monitoring, maintaining system security, reliability, and availability. Centralized mainframe environments are relatively easy to manage and are typically associated with high-level of security, data integrity, and good overall system availability. The present lack of administrative control over Client/Server environments is a major de-motivating factor for many organizations, who are considering migration from mainframe based systems. Personal Computer based networks are particularly difficult to administer and significant resources are needed to maintain Personal Computer environments in operation.

Client/Server administrators need to continuously monitor and pro-actively manage the system to ensure system availability. The key to effective Client/Server administration is fast identification of problem areas and fast failure recovery. Ideally, administrators should be able to anticipate critical situations using information derived by monitoring important resources. This allows intervention before the problems escalate and affect users of the system. Because of the complexity of distributed environments and the

interaction between various system components, it is no longer possible to rely on traditional techniques, where the administrator interacts directly with the system using operating system commands. Automation of systems administration is administration is an essential pre-requisite for the successful implementation of Client/Server systems.