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**IT Asset Management:  
What Computer Equipment Do You Own and Where Is It?**

Charlotte Lenox  
Associate Director, ITC Business Manager  
Baylor University  
Waco, TX  
254-710-4675  
charlotte\_lenox@baylor.edu

Karla Nelson  
Asset Management Coordinator  
Baylor University  
Waco, TX  
254-710-4220  
karla\_nelson@baylor.edu

**Abstract**

Baylor University has implemented an IT asset management tool that features dynamic automated inventories, remote control, software distribution, software metering, and a web interface. This session demonstrates how Baylor has used this powerful tool for more accurate technology planning and management of a multi-platform environment.

“Information technology is a duck. In itself, a duck is a net consumer of resources; it must be contained, requires constant care, becomes less valuable with age, leaves a mess wherever it treads, and is counterproductive until converted into practical application. Caring for ducks requires partners, those who grow the grain, mill the feed, and make the fence wire. Ducks have a mind of their own. They are oblivious to their purpose, and require proactive management if they are to effect a positive result. . . As I look at us, those who consume and implement technology, I see that we have become focused on making faster ducks---whose meat tastes no better, whiter ducks---whose feathers are no softer, bigger ducks---with eggs no larger, and smarter ducks—whose intellect does nothing but make them more difficult to manage. Alternatively, we must become duck farmers. This requires that we change our focus from the duck to those consuming the duck, to those supporting our efforts to produce the duck, and to the management of the duck.”<sup>1</sup>

I will translate this last sentence to mean that our focus should be on our clients and departmental organizations as those who consume the duck. We need to focus on our software and hardware support staff, helpdesk staff, and those who handle software licensing. These are the folks who support our efforts to produce the duck. Finally, the management of the duck is financial administration and technology planning.

In our presentation we will discuss how we evaluated and found ways to change our asset tracking processes. We’ll describe how we went about choosing a software package for asset management, including what features we found available and which ones mattered to us. Then we will give an overview of the implementation of the package we chose; we’ll discuss the hardware configuration, software installation on both the server and client units, and how we communicated our plans to the clients. We did have problems, such as technical issues with the software itself, surprises about personnel time involved, and political problems with some departments on campus, and we will share those with you. Lastly, we will wrap up with a status report of where we are now in the implementation process and what results we are experiencing.

Baylor University owns approximately 4600 desktop computers. Through the Baylor Computer Store and the Installs Group, the Information Technology Center provides procurement and installation for all new computers on campus. Traditionally we have tracked these assets with a FileMaker Pro database via sneaker net. As part of each computer installation and computer move, the Installs Group completed a worksheet listing the computer’s vital statistics along with room number, user name, department number, and purchase order. That data was then manually entered into the asset database. On a rotating basis throughout the year, we also conducted physical inventories in the departments. You can imagine how eager the departments were to see us coming! We continually analyzed this process and implemented improvements such as scanning the serial numbers and asset tags rather than manually writing them, or scanning directly into the database with manual “clean up” on the room numbers and user names. Whatever we tried, it continued to be a cumbersome process at best. As we know, computers don’t stay in one place, and elves can change the configurations and upgrade or downgrade computers overnight. The phrases “herding cats” and “nailing Jello to a tree” come to mind.

We used this database for administrative reports. Such reports were for the financial administration to use in technology budget planning as well as for documentation in calculating

ITC support costs. Our hardware and software support groups used this database to give them (very limited) background data before going on-site for a trouble shoot. This database gave us no information about the software on our computers. We tracked software from the sales records in our computer store. We had no way to know which computers the software was installed on, or how many computers may have gotten an installation from each purchased copy. There was no record of software purchased outside the computer store. When Karla Nelson was hired at Baylor to coordinate our IT asset management, she began evaluating and recommending changes to our asset tracking system.

Wouldn't it be beneficial to know what kind of equipment we have and who is using it? Is there a better way to keep track of the equipment and software that we own? Is there a system that could also meet the needs of our IT support team? These are the some of the questions we ask ourselves and that encouraged us to begin a search for a better system. We want to share with you how we went about choosing and implementing a new system and what problems and results we have had.

One thing we knew for sure is that equipment information provides the essential link in connecting the IT support team to the client. When ample data can be obtained on the client the troubleshooting process is less problematic, and administrative tasks, such as planning and budgeting, will become more effective.

We formed a team to research and evaluate other alternatives. We found a wide range of products that offered some advanced technology in asset management. It was soon determined that there were several qualities we felt were essential to get the results we needed. Each product researched was given the following criteria to live up to:

- **Multi-platform support.** Baylor University has a heterogeneous environment consisting of approx 50% Machintosh and 50% Window PCs.
- **Robust, relational database.** A scalable system is crucial with the rapid changes in technology.
- **Automated and accurate data collection.** Experience with our past system taught us that unless the data was correct it was not very useful.
- **Global system.** Realizing the potential benefits to a diverse group of people, concentration on multi-featured products became a high priority.
- **Well-designed product.** Quality in design was essential.
- **Reputable and knowledgeable product vender.** Since the system would be used by such a large group of people we felt support for the product was a must.

Months were spent researching what products were available. We were surprised at how many there were. Many of them were eliminated because they did not support the Machintosh client. We did however find a few worthy of a closer look. We installed a total of four in-house pilots

for a period of 3 months each. The pilots allowed us to setup on-site a complete system with up to 25 client machines. These pilots gave us a clear picture of the software's architecture, what data could be collected, and effects on the clients and network in our environment.

Although all of the products we tested had several good qualities, we determined the one that best fit the needs of Baylor University was Intel LANDesk Management Suite. LANDesk provides a fully automated hardware and software inventory on a schedule of our choice. It supports Oracle and SQL databases and also includes remote control, software distribution, software metering and web access features. We also found it featured in the PC-Week April 19, 1999 Shoot-Out as the top desktop management package.

It became apparent during our evaluation stage (by installing the onsite pilots and talking with existing customers) that this software was not a plug-and-play type software. The Intel Corp referred us to their Deployment Value Added Reseller (DVAR) for assistance in the purchase and deployment of the LANDesk product. We selected a DVAR out of the Dallas area to work with us on establishing a custom designed plan for Baylor's network environment. They would also assist with the installation of the software and provide on-site staff training. The installation was implemented in the three phases.

Phase I involved extensive planning of hardware requirements and examining our existing infrastructure design to establish an installation plan. Some of the information that had to be gather included the following:

- Total number of nodes
- Server requirements
- Line speed and number of remote sites
- Number of domains
- Which LANDesk features did we want to install and how were they to be configured
- Available servers for the service center's installation
- Type of database to use

In Phase II we installed the core components using the design plan developed. The following give a brief description of each component (*see appendix B*):

- **Core Server** processes the inventory scans from the clients and sends it to the production database.
- **Production Database** contains the system operations for the Oracle Server. It records information about users and the configurations for the databases.
- **DataMart Service Center** is a database that extracts information from a management database to provide fast access when querying that data or generating reports.
- **Service Centers** are servers that host one or more management services. Service Centers reduce the load on the core server for the following services: Client

Deployment, Software Distribution, and Software Metering. Service centers were installed on two existing servers for our environment.

- **Management Console** is used to conduct management activities such as taking remote control of a managed node, viewing inventory data and scheduling software distributions. Baylor installed nine management consoles on ITC support staff computers.
- **Web Console** offers a subset of Intel LANDesk Management Suite's functionality from a Web browser. The management console is the main resource for managing computers, but the Web Components are useful when the console isn't available. Ten Web Consoles were setup for our help line and other software support team.

Phase III deployed the software to our clients. The Window machines' installation was automated using network login scripts to run a batch file to install the software. The Machintosh clients had to be installed manually. This phase consumed the greatest amount of time due to the fact we had to physically touch each of our Macintosh clients.

The planning, installation, and deployment of this product took approximately 9 months. An additional 3-4 months was spent customizing data and reports. We encountered several bumps and bruises along the way. We had problems on the clients ranging from general error messages to the system locking up entirely. We discovered that the software metering module that was installed created most of the problems we were having on the clients. This was not a feature we were benefiting from and decided to completely remove it's components from our clients. Other than the metering issues we only encountered a few isolated problems on the clients. Database issues were found. Some of the major problems we had were not being able to view all of the client's data from the Web Console, and the custom data we entered would not permanently remain in the database. We installed several patches released from Intel that corrected the problems. The attention needed on these issues demanded a lot of time from our network administrators, database administrator, and other technical support staff that was not originally expected. Ongoing upkeep is needed to stay current on newly released patches and upgrades from Intel.

We also faced some in house issues with our clients. Letters were sent to all department heads notifying them of the new software and requesting them to inform the faculty and staff in their department. In some cases, not any form of advanced notification or information given to the client would have made any difference on the acceptance of the software. We were often accused of being "Big Brother" and "installing spy software". We had one comment overheard in a staff dining room, "ITC can now tell when you are playing games on your computer. They have already had one person fired because he was caught playing games." However, we found the majority was receptive to the software. Informing the clients of the purpose of the software, as we went, put any uneasiness to rest.

As the project came together we did begin to see the benefits that we had expected from this tool. Our help desk and technical support teams have found the remote control feature to be an essential tool. It has enabled them to work together with the clients as they both view the

problem simultaneously. The remote control feature is also utilized by our network administrators to access servers located on the other side of the building and across campus. An additional level of security is assigned when the client software is installed on a server.

The inventory scan produces a plethora of data in the database on each device (*see appendix A*). It collects both hardware and software information. We have the capability to add custom data to the device's record that identifies the users name, department account number, asset number, ect. Through various reports this comprehensive inventory information can provide justification for upgrades, purchase decisions, problem solving, and other organizational needs. We can easily determine which clients need the latest software upgrade by generating a report. There are limitations to this inventory system. If the computer is not connected to the network it cannot be automatically scanned into the database. However, a scan can be run at the client and saved to a disk and then imported into the database. Equipment such as printers, scanner, and monitor cannot be recorded in the database as a separate record and have to be tracked manually. Also, many of our faculty and staff have Baylor owned computers they use at home. We decided not to install LANDesk on these because any personal computers dialing in would be installed as well. An additional batch file was created and added to the login script to check for a dial-in connection to prevent any personal computers from being installed. A manual record is kept on home computers.

Baylor has ongoing plans to integrate LANDesk with two other systems. First, our helpdesk has recently installed Heat, a helpdesk software package by GoldMine Software Corporation. Integration with this software would provide the LANDesk inventory information along side the client's helpdesk record. We feel this will give our helpdesk additional information that could be useful in troubleshooting problems. Second, we are looking at integrating with our PeopleSoft financial software. Depreciation and the net worth of the University's assets are calculated and recorded in our Controllers office. We are researching the possibility to pull our LANDesk data into PeopleSoft. This would greatly improve the accuracy in our financial records as well.

Intel has shown a desire to enhance this product to keep up with new technology. Intel has also shared with us their commitment to continue supporting the Machintosh platform. We will be participating in a beta test on an enhancement pack they are developing that includes many enhancements to the Macintosh as well as some added Window enhancements. Since we have purchased this product Intel has added a new module to their suite called Targeted Multicasting Software. This module is purchased separately from their packaged suite. We decided not to purchase this module at this time. Software distribution is one area that we have not used extensively. We do plan to utilize the software distribution feature as soon as time and staff resources become available. We are continuously discovering new and improved ways to use this asset management tool. The benefits are growing with time as we make use of its wide range of features.

In summary, we chose LANDesk because of the features that mattered in our environment: support for both Mac and Windows platforms, software distribution, remote control, and of course inventory scanning for both hardware and software. We scan for hardware attributes at every startup and for software every two weeks.

We found the cost of setup to be reasonable. After buying the LANDesk software and 5000 client licenses, we purchased three Dell servers, extended our Oracle license, and engaged a DVAR for consultation throughout the setup and implementation. We installed LANDesk on the Windows machines using the software distribution feature through login scripts; installation on the Macs was manual. We borrowed staff from another ITC group, and they, along with two student workers, assisted Karla in the Mac installations.

Administrative support for this project was crucial; we had the full backing of our Vice President for Finance and Administration. We issued a letter to all department heads explaining the purpose of the software and how it would be installed. We also published an article in our IT newsletter about LANDesk. In retrospect, we should have put more effort in educating our clients before installing the software. Perhaps the letter to department heads should have been followed up with another letter to all employees with more detailed explanation. Overall, the product was fairly well received.

We encountered some technical problems. I feel that we would have had far more trouble than we did had not our DVAR mapped out a fairly structured implementation plan at the very beginning. Intel was helpful in working through a lot of the bugs, including some of the issues that were unique to our campus. We underestimated the magnitude of this project. We had to call on our DBA to assist with setting up the Oracle database servers and to help when technical problems arose that involved the database. Two of our systems engineers have given many man-hours to this project, and their help will continue to be needed, albeit to a smaller degree, as we maintain and expand the system. It would have helped to realize these facts at the beginning. Two of our schools, the School of Business, and the School of Engineering and Computer Science chose not to allow LANDesk to be installed on their computers. These two schools have some degree of IT autonomy and would not be forced to participate. We have hopes of including the School of Engineering and Computer Science in the near future.

Outside of the School of Business and the School of Engineering and Computer Science, LANDesk is now installed on 95% of Baylor's computers. After installation was complete, a lot of data entry was required to match each computer with a Baylor ID tag, room number, department account number, and user name. We have recently started generating reports from LANDesk for the administration to use in budget and technology planning. Our support staff have been using the remote control feature and information from the web console since last fall. We see the upkeep of this system to be continual, but that is to be expected. We are in the process of creating web access for departments to view the hardware and software data for their areas.

In closing, our advice to another institution in setting up an asset tracking system would be first to choose carefully. If you are buying a software package, decide which features are important in your environment. There are many packages available at varying prices. LANDesk was not inexpensive, but for the features it gave us – features we decided were important – the price was reasonable. Don't underestimate the time and man-hours needed for such a project. And finally, communicate with your clients.

<sup>1</sup>Chris Jesse, A Journey Through Oz (Kendall/Hunt Publishing Company; Dubuque, Iowa, 1997)



## Appendix A

### PARTIAL LIST OF ATTRIBUTES COLLECTED BY LANDesk

BIOS - Asset Tag	Network - TCPIP - Address
BIOS - Copyright String	Network - TCPIP - Host Name
BIOS - Date	Ports - Communications Port (COM1) - Name
BIOS - ROM Size	Ports - Communications Port (COM1) - Address
BIOS - ROM Version	Ports - Communications Port (COM1) - Maximum Speed
Bus - Type	Ports - Communications Port (COM2) - Name
Coprocessor - Math	Ports - Communications Port (COM2) - Address
Keyboard - Code Page	Ports - Communications Port (COM2) - Maximum Speed
Keyboard - Number of Function keys	Ports - Printer Port (LPT1) - Name
Keyboard - Type	Ports - Printer Port (LPT1) - Address
Mass Storage - Floppy Drive Count	Printers - Default Printer
Mass Storage - Floppy Drive (0) - Type	Printers - Printer (0) - Name
Mass Storage - CDROM (0) - Drive Letter	Printers - Printer (0) - Printer Port
Mass Storage - Fixed Drive (0) - Total Storage	Processor - Processor Count
Mass Storage - Logical Drive (C) - Available Storage	Processor - Speed
Memory - Physical - Bytes Available	Processor - Type
Memory - Physical - Bytes Total	Processor - Vendor
Modems - Baud Rate	Processor - Features - MMX(TM) Technology
Modems - Manufacturer	Software - Name
Modems - Model	Software - Version
Mouse - Buttons	Software - File Size
Mouse - Type	Software - Path
Network Adapters - Network Adapter (0) - Description	Sound Card - Manufacturer
Network Adapters - Network Adapter (0) - Vendor	Sound Card - Type
Network - NIC Address	Video - Colors
Network - IPX - Address	Video - Resolution
Network - IPX - Network Number	Video - Adapter (0) - Adapter String
Network - IPX - Node Address	Video - Adapter (0) - Memory
	Video - Adapter (0) - Type

*\*partial list only-other attributes collected are not listed.*

*Appendix B*

