A Functional Approach to IT Asset Management
A White Paper

Abstract:
As companies begin investing greater amounts of their capital in technology purchases, they struggle with how to determine the business benefit derived from the investment. By evaluating the Total Cost of Ownership (TCO), companies may begin the process of recognizing the returns of their information technology (IT) investments.

An IT asset management system serves as the data-gathering engine and repository for information needed to calculate the TCO. By improving the budgetary planning process, allocating costs across the organization, and approving prudent technology purchases, organizations can maximize their IT investments. Several years ago, the CIO division of Lucent Technologies recognized the necessity of IT asset management and its potential to reduce costs, increase efficiency, and improve competitiveness. This paper describes how Lucent achieved these goals by developing an advanced IT Asset Management technology.
Introduction: Effectively Managing IT Resources

The explosive growth of technology has significantly increased corporate efficiency. Yet without proper management or control, this growth can rob companies of the very productivity that it was supposed to provide. The problems associated with unchecked IT asset growth fall into three areas - hidden costs, preventable losses, and reduced competitiveness.

The Total Cost of Ownership (TCO) metric was designed to quantify all the costs - both obvious and hidden - associated with IT purchases. The TCO for a PC purchase includes the following components:

- Hardware
- Software
- Networking infrastructure
- Security
- End user training
- Software licensing

By capturing and analyzing the data required to calculate TCO, an organization can make sound investment decisions regarding future purchases and appropriately allocate expenses to the business areas that use the asset.

Companies that accurately track IT purchases can negotiate contracts to purchase, lease, maintain, or repair hardware and software products. By keeping an accurate record of the number of desktops, companies can take advantage of volume discounts for software licenses or desktop purchases. Furthermore, without proper controls, capital assets such as hardware systems cannot be depreciated properly, legitimate business expenses can be overlooked, and the TCO per desktop can easily soar.

According to a Datapro report, the support costs for a single workstation range from $3K to $25K. Much of that figure can be attributed to hidden costs, including hours of help desk support. Support needs mount due to inaccurate IT asset record keeping. For example, if a PC is configured improperly, the help desk may spend hours researching the problem. Another hidden cost is the improper allocation of a resource: e.g. if a PC is underutilized by the end user, expensive peripherals and components might be wasted. The same report stated that the license only accounts for 25% of the software lifecycle cost.(i)

Hidden costs are a direct result of unmanaged IT asset growth. Vendors often release new versions of hardware and software and early adopters within an organization upgrade their systems prematurely, leaving others behind. However, standardizing a particular hardware and software configuration can reduce the problem. Unmanaged, the situation can reach the point when one
sales office, division, or region cannot take advantage of another's information or processes.

In addition to hidden costs, there are more obvious losses to consider. For example, employees often move within an organization, taking their notebook computers with them. Often, it is very easy for hardware to be lost in the transition when people switch locations, responsibilities, or even employers. While notebook computers are the most obvious example, companies can easily lose track of larger hardware items - which can result in ordering more servers than they need. If the IT procurement department can access the proper information, they can make the best purchase decisions, thus optimizing their budget.

The proliferation of disparate IT assets also raises the potential for noncompliant or unauthorized software. A number of software industry organizations have begun "raiding" companies, looking for pirated software applications. According to the Software Information and Industry Association (SIIA), companies found to have unauthorized software can be prosecuted and fined as much as $100,000 per violation. Federal, state, and local government agencies are also aggressively searching for unauthorized software or invalid licenses. Companies using such software may face severe penalties. The Federal government helps enforce the issue by revoking sought-after government contracts.

Unauthorized software can pave the way for corrupt data, bugs, or other flaws, which can quickly infect clean systems. Depending on the problem, software bugs and viruses can ultimately cost the corporation thousands of dollars in lost revenues through repairs, downtime, and support costs.

For all these reasons, asset management is critical to the success of any IT effort. Furthermore, there is a high return on investment (ROI) associated with a fully implemented asset management system. Datapro suggests that the cost of an enterprise asset management system can be recovered within six months. (ii)

**Background**

Lucent's IT asset management initiative began in 1998. At the time, the goal seemed unusually formidable: create the means to inventory and monitor over 160,000 desktop and workstations as well as thousands of software packages in 59 countries.

Corporate personnel first began the process of developing an asset management capability by evaluating off-the-shelf IT asset management products. However, these packages did not provide the scale, capability, or the compatibility required. So, Lucent decided to develop its own solution: AMT 2000.
Defining the Scope and Scale of the IT Asset Management Solution

To develop AMT 2000, Lucent identified general system requirements, specific tasks, and bottom-line benefits that it needed to provide. System requirements specified that the asset management tool include the following specifications:

- Architecture independent
- Cross platform support
- Compatible with various legacy applications
- Flexible and scalable
- Operator friendly
- Provide overview and in-depth information
- Use Internet/corporate Intranet as communications infrastructure

These specifications defined the direction of the development efforts. The solution needed to perform specific tasks such as auditing system configurations, tracking and reconciling inventory, monitoring compliance, and packaging data for reports and analysis. In addition, it had to provide bottom-line benefits. Specifically, it needed to enable the corporation to do the following:

- Improve capacity planning, budgeting, and lifecycle management
- Increase help desk performance
- Avoid software license violations
- Enforce corporate desktop standards
- Maximize lease and purchase agreements and vendor/supplier relationships
- Locate and quantify assets during mergers and acquisitions
- Ensure purchased assets were installed
- Reduce TCO per desktop and workstation
- Support strategic initiatives

Lucent’s IT Asset Management Solution.


AMT 2000 consists of three general functions: Windows® desktop inventory and tracking, UNIX® workstation inventory and tracking, and asset management tracking.

AMT 2000 remotely and automatically scans, retrieves, and records desktop and workstation data on a secure, central database. Personnel can use this information to control costs and improve productivity throughout the corporation.
As shown in Figure 1, the Windows and UNIX inventory and tracking functions collect data from a desktop or workstation. AMT’s Window’s desktop inventory tool and UNIX workstation inventory script handle desktop discovery by auditing hardware, operating system, and software network applications data automatically. After collection, the data is sent to a desktop and workstation collection server. The desktop and workstation collection server integrates desktop discovery data with information from an enterprise database for employee identification and look-up. This database could come from a human resources application or Enterprise Resource Planning (ERP) software.

Figure 1
Overview of AMT 2000’s inventory workflow on both Windows Desktops and UNIX Workstations
Desktops and workstations are polled at log-in, as illustrated in Figure 2. However, users can program the system to conduct audits weekly, monthly, after a specific event such as a Microsoft® Systems Management Server (SMS) software delivery, or upon demand.

The desktop and workstation collection server also integrates backroom applications, including business analyst research and database maintenance records. All the information is stored on an enterprise-wide desktop and workstation inventory database. Users can access information through an Intranet web page or through structured queries.

AMT 2000 provides views of both individual desktops as well as corporate view of the desktop inventory. Using this information, viewers can monitor and maintain standards for enterprise architecture, corporate security, end user core software, and business unit-specific applications.

**Asset Management in a Windows Environment: Combining Power and Simplicity**

One of the concepts underlying AMT 2000 is ease of use. To this end, Lucent developed a strong user interface experience for the Windows operating environments.
At system start-up, AMT 2000 automatically verifies the user information - employee name, PC bar code/asset tag number, and PC ownership data - by comparing it to the profile in the enterprise-wide desktop and workstation inventory database. The profile includes:

- Hardware characteristics
- Software characteristics
- Network characteristics
- Software compliance
- Upgrades needed

After the log-in is verified, each desktop may be scanned by AMT, and the data may be used to develop daily summaries and weekly analysis reports. This information is then published to an internal web site. Users can view specific desktop information by viewing a custom web page as shown in Figure 3a. It contains the following:

- Hardware compliance information
- Software compliance information as shown in Figure 3b
- Individual's end user desktop results
- Web-based asset management tool execution
- UNIX workstation compliance information
- Asset management information
Using AMT 2000, CIO management publishes Asset Management Daily, an internal web-based resource that presents a daily overview of asset resources, including:

- Key Asset Management Tool Results
- Enterprise Hardware/Software Results
- Hardware/Software Reports by Business Unit

The web page and Asset Management Daily provide a convenient way to review asset resources at any level desired. The information included in the user inventory information includes computer name, data collection time, network domain, operating system, the version of asset management solution, processor, clock, and unique ID.

Software compliance information provides data for a specific desktop. The data includes:

- Manufacturer
- Package Name
In addition, the software remediation feature lists the software needed by that desktop and includes:

- Software by Manufacturer
- Software Package Name
- Software Package Version
- Compliancy
- Details for a Specific Desktop

Asset Management Daily provides a summary of information for each business unit, regarding barcode participation and usage. Users can obtain the business unit’s percentage of barcode participation, hardware and software inventories, compliance status, and many other reports, such as the percentage of desktops with correct or incorrect barcodes on the hardware. Figure 4 shows an example of the software inventory summary provided by Asset Management Daily.
The Global Reporting System: For In-depth Reporting and Analysis

To help users spot trends and perform in-depth analysis, Lucent developed the Global Reporting System (GRS) as shown in Figure 5 and Global Analyzer Tool (GAT). The GRS works with Microsoft Access database software.

The GRS provides four basic types of reports:

- **Hardware Results** - by manufacturer, processor, and assessment
- **Software Results** - by manufacturer, application, and assessment
- **Risk Assessment** - matrix assessment report
- **Pareto Reports** - software package counts

Users can view each report by cost center, location, international region, business unit, and enterprise and select how the information is displayed (i.e.) tables, graphs, or charts. They can apply structured boolean logic rules to selection queries.
criteria covering domains, business units, operating systems, software packages, system hardware types, and assessments. In this way, they can create recurring book reports. They can send their books to other GRS Analyzer users without sending the data itself. Depending on their specific needs, they can display that information in a spreadsheet and export it to other spreadsheet systems.

For example, a user may apply structured Boolean logic to selected criteria, causing the GRS Analyzer to display the number of desktops that have Windows 98 but not Microsoft Word.

Collecting Asset Data in a UNIX Environment
To collect and manage UNIX-based IT assets, Lucent Technologies developed a UNIX Script Tool. The Script Tool collects UNIX-based hardware and software data on a weekly or monthly basis. The results are published on the internal web page, which displays data by user, business unit, location, IP subnet, environment, and current machine. Users can also use the web page to perform assessments, check compliancy, and handle other tasks at specific schedules.

The UNIX version of the GRS allows users to take weekly snapshots of their systems. Like the Windows’ version, it works with Microsoft Access and provides reports based on a range of selection criteria, including:

- Hardware - manufacturer, model, compliance, location, organization
- Software - manufacturer, package, compliance, location, organization
- Detailed operating system patch report

In addition, asset management reports are available by individual, business unit, location, etc. Users can query the system for a web page report, download of information, and download of users missing a record.

In essence, the Windows and UNIX inventory and tracking tools and the general asset management reporting capabilities gives management timely access to vital information it needs to maintain efficiency and productivity. Yet AMT 2000 has two key attributes that separate it from typical asset management options: security and scalability.

Security and Scalability: Setting Standards for Performance
Using passwords and other techniques, users can restrict access to a specific desktop, location, or business unit. They can record who accessed what data, when, and for how long. In this way, they can make sure that private information remains within a private domain.

If the role of security is to restrict access, the role of scalability is to extend it. Lucent built scalability into the core of its IT Asset Management solution. As a
result, it works equally well in environments of 1,000, 10,000, and 100,000
desktops.

AMT 2000 tracks hardware and software resources on over 160,000 desktops in
59 countries. The system accurately identifies more than 1,600 make/model
combinations from 100 hardware vendors and 28,000 software packages. It
supports operating systems and applications software in 13 languages.

Specifically, the AMT 2000 has enabled Lucent to:

• Plan technology deployment for maximum productivity and optimize cost
• Increase return on technology investment by tracking assets and optimizing
  leasing, support, and purchasing programs
• Use IT systems as a strategic tool to support business goals
• Assure compliance with industry and corporate standards

Conclusion: AMT 2000 - A Powerful Asset Management Tool
Understanding all elements involved with TCO - purchasing, supporting, and
licensing software and hardware - impacts a company's productivity and
bottom line and enables management to make better decisions regarding their
investments. Companies practicing IT asset management have access to
accurate and current information to manage rapid technological development
and maximize cost savings. Long-term benefits of asset management include
reduced contractual risks and improved efficiency.

AMT 2000 effectively controls and maximizes hardware and software resources
and minimizes costs. This tool provides all the functionality, flexibility, and
scalability an organization needs to effectively manage IT assets. By using the
information gathered by AMT 2000, Lucent can control both the hard and soft
costs of its IT investment.

(ii) ibid.

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