IBM Retail Store Solutions
July 2003

Information Brief

Understanding Systems Management

Overview

- ***According to a Gartner Group study, large organizations spend a majority of IT budgets managing and maintaining hardware and software[1]***
- ***Systems management tools allow retailers' IT teams to perform many management tasks remotely, without visiting each store***
- ***Key benefits can include greater uptime, improved ease of use and lower total cost of ownership (TCO)***
- ***IBM offers a robust suite of innovative systems management tools for back-office PCs and servers as well as POS systems***

Systems management is the process of administrating, monitoring and maintaining the hardware and software assets in an organization. It is typically performed remotely, from a centralized location. In retail, systems management offers a sensible approach to dealing with IT infrastructures that are becoming more elaborate and expensive to control. Essentially, systems management tools are designed to help retailers reduce IT costs and simplify IT management tasks – without sacrificing uptime or reliability. These tools can be deployed in many different retail operations, from smaller independent chains to multinational enterprises, and in many segments of the industry, from grocery and mass merchandisers to food service, general merchandise, gas and convenience, and specialty.

Helping retailers reduce costs and improve reliability

In the ultra-competitive retail environment, where margins are thin and getting thinner, cost reduction is a key strategy for maintaining healthy m argins. As a result, systems management is very attractive to retail IT teams. Analyzing broader IT spending habits illustrates why.

In 2001, a Gartner Group study[1] showed that a typical large enterprise spends 31% of its IT budget purchasing hardware and software; the remaining 69% is spent on the personnel and services required to keep the hardware and software operating correctly. The point here is that large organizations usually spend more money managing hardware and software than they do on the products. As organizations that depend on IT systems for checkout, inventory, ordering and other operational functions, retailers are likely to employ a similar budget distribution. And they can realistically expect to spend the majority of their IT budget on hardware and software management, maintenance, training and technical support.

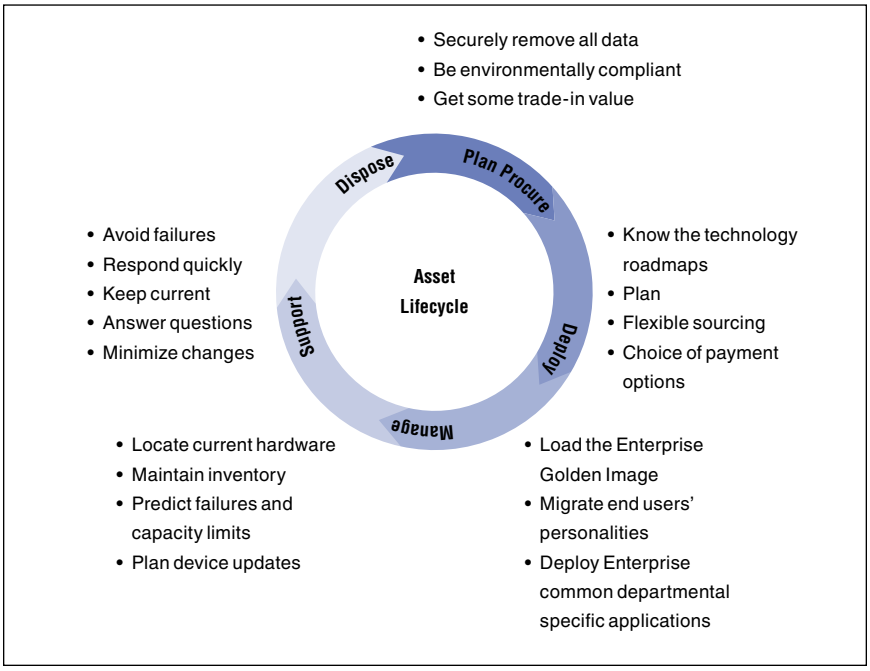
This is important, because many of these hardware and software management tasks – including deployment, setup, configuration, inventory, diagnostics, troubleshooting and system recovery – are performed manually. Technicians visit each store and physically interact with every client and server to keep store operations running smoothly. The time and expense associated with these tasks can be enormous. Systems management software allows retailers' IT support staff to perform many of these tasks from a remote location, without visiting each store. This has two effects. First, IT teams can expend fewer resources to maintain store systems. Second, they can ensure a consistent approach to common issues and minimize the risk of human error, both of which will improve overall reliability. Higher reliability is critical in retail, where downtime at the point of sale (POS) has an immediate and negative effect on revenue.

Practical examples are numerous. Retailers' IT staff can create software images (including required BIOS, operating system and applications) and push them out through the network instead of installing software manually. Asset inventory data can be extracted remotely and automatically. System recovery (re-imaging and rebooting) can be performed remotely as well. Powerful self-diagnosing systems are designed to recognize operational problems, offer solutions, and then resolve the issue or alert an appropriate technician automatically. Autonomic systems take this concept a step further, with the ability to find certain problems before they occur and resolve many of them without human intervention.

Systems management offerings from IBM

IBM offers a robust suite of systems management tools engineered to help improve uptime and reduce IT costs for every phase of the asset lifecycle. In some instances, such as desk-side support, IBM customers have used these tools to generate savings as high as 70%. In retail, these tools are designed to extend the benefits of systems management from the back office to the POS.

IBM retail systems management spans the entire lifecycle



For large retail operations that use the IBM 4690 Operating System, IBM recommends Tivoli® Point-of-Sale Manager (TPOSM). For smaller-scale retail operations that rely on Microsoft® Windows® or Linux operating systems at the POS, IBM recommends an entire suite of products under the IBM ThinkVantage™ Technologies brand. (For large retail operations running Windows or Linux, IBM recommends Tivoli products. In other cases, Tivoli and ThinkVantage tools can be used in tandem. This brief does not explore these scenarios. For more information, please visit www-3.**ibm.com**/software/tivoli/.)

Systems management for IBM 4690 OS environments

For 25 of the 50 largest retail enterprises in the world – and 39 of the top 100 – the IBM 4690 Operating System (OS) is the platform of choice. Designed specifically for retail, it is considered one of the most reliable operating systems available.

Historically, retailers have not been able to integrate the management of POS and back-office systems, simply because a systems management tool that addressed enterprise infrastructure as well as POS systems was not available. IBM TPOSM is designed to solve this problem and help eliminate the need to support two distinct systems management schemes. IBM TPOSM and Tivoli Enterprise™ create a network environment that can allow retailers' IT support staff to monitor all store systems and respond to issues automatically. Specific capabilities include:

- *Centralized management and monitoring*
  IBM TPOSM filters, tracks and responds to events through the Tivoli Enterprise Console®, which helps improve reporting and shorten response time when a POS system is down.

- *Automated software distribution*
  IBM TPOSM automatically distributes software to IBM 4690 POS controllers, so retailers' IT support staff can install new software and updates to multiple stores in one step.

- *Inventory collection and reporting*
  IBM TPOSM maintains current inventories of components and release levels for all POS devices in the enterprise, helping retailers' IT staff plan upgrades effectively.

- *Graphical decision support*
  IBM TPOSM represents inventory and event data graphically with preset queries, enabling quick and intuitive data analysis and more accurate resource planning.

To accomplish these activities, IBM TPOSM integrates with the following Tivoli tools:

- *Tivoli Enterprise Console*
  Consolidates alerts from the 4690 OS to a single console, enabling system administrators to track POS events and respond to them. Event analysis, notification and response can also be automated.

- *Tivoli Software Distribution*
  Deploys new applications, operating system updates and data files to thousands of controllers automatically and remotely on an enterprise-wide scale.

- *Tivoli Inventory*
  Makes IBM 4690 system configuration information readily available to retailers' IT support staff via a relational database to help enable faster, smarter decision-making.

Keep in mind, the IBM 4690 OS features a wide variety of built-in systems management capabilities that work in concert with IBM TPOSM and other Tivoli tools.

Features include:

- Remote software loading to the terminal from the controller
- Remote system logging for terminal debugging
- Alert generation and proactive reactions to select events
- Hardware and software inventory of the terminal and controller
- Software distribution for file upgrades and maintenance
- Remote console feature on the controller

Systems management for Windows and Linux environments

Many smaller-scale retail enterprises run Microsoft Windows or Linux operating systems at the POS and in the back office. For these retailers, the IBM ThinkVantage suite of systems management tools provides a reliable, highly versatile and cost-effective solution for systems management. These tools include IBM Director for remote management, and four tools for software deployment – ImageUltra™ Builder, Software Delivery Assistant, Remote Deployment Manager and System Migration Assistant. The ThinkVantage suite of tools also includes Rapid Restore™ PC for fast data recovery.

- *IBM Director*
  IBM Director is a powerful, highly integrated systems management software solution designed for ease-of-use. Its non-proprietary, open standards approach ensures overall management of a wide range of devices while integrating with other management software. Through IBM Director Agent, more than 5,000 systems can be supported across a broad range of operating systems and non-IBM[2] hardware. In fact, IBM Director enables remote systems management of clients, including IBM and non-IBM[2] PC-based servers, PCs, POS systems, IBM ThinkPad® PCs and other laptop PCs running on a Microsoft Windows or Linux platform. Its capabilities include:

  Event management. This enables IT support staff to identify and categorize events, then automatically initiate actions in response. For example, an event action plan can be configured that pages an administrator if the free space on the main data drive drops below 100MB, so the administrator can take corrective action before users are affected. Specialists can monitor systems for memory leaks and bottlenecks, automatically scheduling applications to be refreshed or devices rebooted during "store down" periods in order to address potential downtime errors. Automated event handling moves retailers closer to fully autonomic (or self-healing) computing, where hardware and software assets can identify many potential problems and fix them before they occur.

  Remote control. Displays the desktop of a remotely managed system within a Director Management Console, allowing IT support staff to work at a remote terminal as if they were sitting at it. Teams can also view a listing of all the consoles that have remote sessions with the managed system, and see the controlling state of each.

Inventory management. Allows retailers' IT teams to collect detailed configuration information about the hardware and software currently installed in stores. This information is saved to a relational database where it can be analyzed and queried.

Resource monitoring. Displays statistics on critical system resources, including CPU, disk, file and memory usage.

File transfer. Remotely transfer files from multiple locations, delete files, create directories, view file properties, edit the contents of a file, and synchronize files, directories or drives.

IBM Director provides FRU numbers in alerts to identify replacement parts, which is important for predictive failure alerts. IBM Director also manages heterogeneous Intel™ and non-Intel environments and provides graphical representations of uptime for all nodes, which is critical in multiple vendor installations. Plus, calendar-based scheduling enables users to conduct a regular series of inventory scans, system power checks and capacity management reports.

- *ImageUltra Builder*
  ImageUltra Builder allows retailers to take hundreds of PC images and consolidate them in a single master image that can be delivered over the network and then tailored to an individual user's needs. With ImageUltra Builder, other IBM customers have reduced the cost of software deployment by as much as 50% and completed these tasks in far less time.[3] It is likely retailers will experience similar results. ImageUltra Builder includes:

Dynamic Operating Environment. Consolidates up to 600 images into a single master image, which can be loaded onto new systems prior to or during deployment. During the initial boot, users work through a menu-driven interface to customize the system. The process only takes a few minutes, yet it eliminates the need for an IT technician to assist in setup, and reduces calls to the help desk.

Hardware Independent Imaging Technology. Allows hardware systems to adjust to the deployed image, instead of the other way around. This eliminates the need to create a separate image for every hardware platform on the network.

- *Software Delivery Assistant (SDA)*
  Using SDA, retailers can load a set of applications from a remote server to the system's local drive, then install the right subset of applications for specific users. By employing SDA, retailers can virtually eliminate the time-consuming, costly delivery of individual applications over the network. Plus, they can track software licenses and add applications or upgrades more easily.

- *Remote Deployment Manager (RDM)*
  RDM distributes operating system and BIOS images, enabling retailers to download images and updates during the initial or subsequent boots, significantly reducing the need to load images locally. With RDM, users can take advantage of ImageUltra tools even when systems are delivered to remote sites. As settings and images change over time, RDM can deliver updates to remote systems.

- *System Migration Assistant (SMA)*
  SMA automatically collects connectivity settings, data files, and user IDs, plus operating system and application settings from an old back-office PC and migrates them to a new back-office PC. This allows users to return to a familiar workstation immediately and resume their activities without customizing the new system extensively.

- *Rapid Restore PC (RRPC)*
  RRPC recovers the most recently saved settings of a file or a hard drive (including applications and operating system) with simple, one-button launching. Full recovery can be completed in as little as 20 minutes, with no operator intervention. For select IBM POS hardware, RRPC will perform the recovery even if Windows will not boot, and it can be performed remotely through an alternate boot sequence. This alternate boot sequence standard capability is exclusive to IBM, and is especially important in retail organizations that want to keep the administration and recovery or corporate data images separate from individual users' data backup.

  Remote recovery can cut service costs dramatically. At some point during their lifecycle, typically every one to four years, many clients must be recovered and re-imaged. Each incident costs time and money. In large retail organizations with thousands of systems, savings with RRPC can be as high as 70% for help desk support.[3]

Why IBM Retail Store Solutions?

When retailers partner with IBM for systems management, they can expect a number of distinct advantages:

- *Choice*
  IBM tools manage multiple operating systems, devices and hardware platforms from IBM and other providers, enabling retailers to perform systems management at the store level and at the enterprise level.

- *Simplicity*
  IBM offers one set of products and one point of contact for systems management, eliminating the time and expense of administrating multiple vendor relationships.

- *Cost-savings*
  IBM tools provide benefits for every stage of the product lifecycle, and are designed to help retailers reduce TCO immediately and over the long term.

- *Innovation*
  IBM is dedicated to developing new tools and improving existing offerings, and customers that partner with IBM gain access to this vast and growing portfolio of advanced systems management solutions.

For more information

Tivoli POS Manager

http://www-3.**ibm.com**/software/tivoli/products/pos-mgr/

Tivoli

http://www-3.**ibm.com**/software/tivoli/

IBM Director

http://www-1.**ibm.com**/servers/eserver/xseries/systems_management/director_3.html

ImageUltra

http://www.pc.**ibm.com**/us/accessories/services/imageultra.html

IBM Remote Deployment Manager (RDM)

http://www-1.**ibm.com**/servers/eserver/xseries/systems_management/sys_migration/rdm41.html

Rapid Restore PC (RRPC)

http://xpoint.com/en/IBMRRPC/RRPC.asp

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1 The IBM home page on the Internet can be found at **ibm.com**

[1] From a Gartner Group study in March 2001, cited in "Tech spending remains strong", published in InfoWorld magazine, June 2001. Available at IT World (www.itworld.com/Man/4215/IWD010618itspending/).

[2] License required for non-IBM systems.

[3] From "Optimizing Lifecycle Ownership Costs: A Guide to Immediate Hard Dollar Savings Utilizing IBM's Management Tools Suite", by Technology Business Research, Inc., 2002.

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