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Improving Patient Care by Managing IT Lifecycles and Processes

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Executive summary

This paper is one in a series of papers that focus on the challenges healthcare providers face in information technology and the best practices for meeting those challenges. This paper focuses on the specific topic of managing IT lifecycles and processes.

The overarching goal of healthcare organizations is to provide quality healthcare for patients. Innovative advances in hardware and software technology have undoubtedly improved patient care and fueled organizational growth, but the management of IT lifecycles in hospitals is often labor-intensive and costly. As a hospital grows, the labor involved in migrating systems and integrating new devices becomes increasingly burdensome to IT departments, resulting in significant challenges to the organization's strategic plan. Total cost of ownership for IT assets is of particular concern due to very tight budgets, rising business expectations, and the increasing complexities of new technologies. And with regulatory compliance and security now critical initiatives for healthcare providers, IT asset management requires higher levels of accountability. As existing IT investments become increasingly stretched, many hospitals are struggling to meet the rising tide of financial demands in multiple areas.

To achieve key business objectives and maintain a competitive edge, providers must align their infrastructure to their operations and become more service-oriented. Despite having limited resources and tight budgets, hospital CIOs can choose to be agents of change by adopting a proactive approach and using IT resources more efficiently to meet challenges. A comprehensive lifecycle management solution lowers the total cost of managing client systems, reduces security risks, simplifies regulatory compliance, standardizes systems, and provides better quality of service to end users. Effective administration and management of IT assets is critical for improving processes and maintaining a stable and secure environment for healthcare providers, allowing them to focus on providing the best healthcare for their patients.

This paper discusses challenges related to IT lifecycles, best practices for overcoming challenges via centralization and automation, and the benefits of implementing those practices.

Rapid growth results in IT challenges

Hospitals are growing quickly, in large part due to acquisitions and mergers, and technology is evolving quickly. In an effort to meet their strategic business objectives, organizations regularly add new end-user devices such as desktop PCs, handheld computers, wireless laptops, and mobile computers on patient care carts, while continuing to upgrade or replace existing systems. This rapid pace of change has resulted in hospitals having to manage numerous isolated IT assets

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that are not integrated and cannot communicate with one another. Technology is increasingly disparate, multiple users work with numerous devices in various locations, and different pieces of software run on different platforms. Device tracking and support is complicated and cumbersome. Although emerging technologies can help hospitals increase their competitiveness, such products are expensive to maintain and difficult to integrate without a service-oriented approach to managing IT lifecycles.

Healthcare providers need to change outdated management strategies to adapt to changing demands, or the expense of managing IT assets will continue to squeeze IT budgets. As shown in Figure 1, the indirect costs of managing systems are significantly higher for unmanaged desktop PCs than for locked and well-managed PCs.

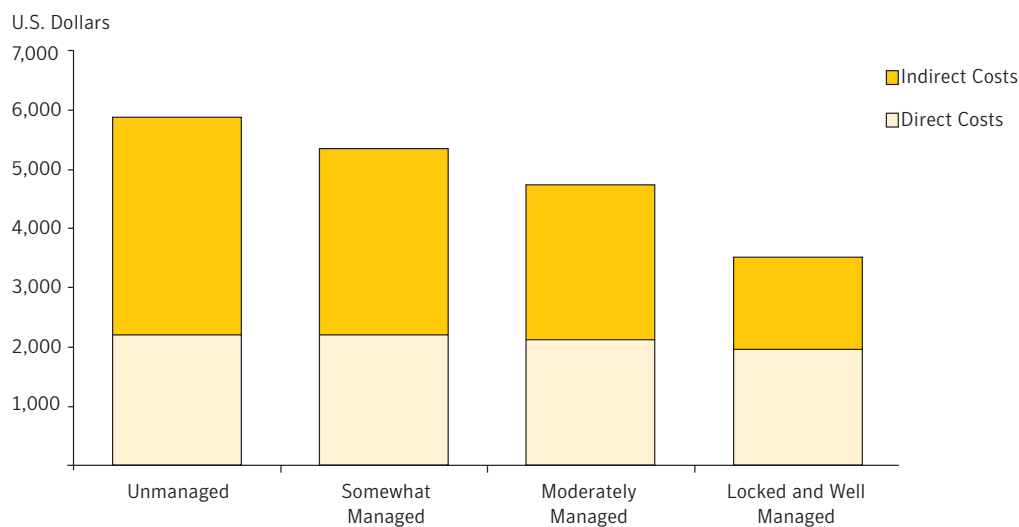


Figure 1. Desktop TCO with varying levels of management.¹

Comprehensive service-oriented management tools that automate policies and processes can reduce the manual management required to maintain IT assets, helping hospitals stem the rising tide of IT expenses by reducing downtime and improving user productivity. Taking proactive steps to deploy a solution for managing IT lifecycles not only increases efficiency, it also reduces the total cost of ownership for systems. According to Gartner, “a locked and well-managed desktop PC can be 42 percent less expensive to keep than an unmanaged one”.²

¹ Gartner, Inc., “Desktop Total Cost of Ownership: 2008 Update,” M. Silver, F. Troni, M. Margevicius, January 24, 2008.
² Ibid.

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As healthcare providers seek to expand their market growth by embracing new technologies to improve patient care, IT departments need to align themselves with the organization's overall strategic plan to achieve operational efficiency. Streamlining patient care by centralizing and automating IT processes makes information available when and where it is needed, reaping the benefits of technology while avoiding the pitfalls that often accompany it.

Managing system inventory

Many devices in today's hospital environment are mobile, making it difficult to discover and track those computers electronically. As a hospital continues to deploy new devices without a way to maintain their status in a centralized inventory, the organization's infrastructure becomes increasingly destabilized. Multiple tools, disparate processes, and manual procedures lead to inflexible operations and increased security vulnerabilities. Help desk issues cannot be handled efficiently, and the heavy burden on IT leads to higher costs and lower quality of patient care. Without a centralized, up-to-date client inventory or knowledge of what devices are available and where they are located, a hospital may suddenly face a shortage of critical systems, or providers may waste money by duplicating purchases.

Imaging new computers and reimaging existing ones is labor intensive and costly for IT because of the complexity of the different hardware platforms involved. To ensure successful system migrations, IT needs to evaluate all the systems involved, take an inventory of installed software, determine the status of each piece of equipment, and integrate it successfully into the existing architecture. Without a centralized management strategy, technicians must physically locate each of the various client-based systems in different areas of the hospital (for example, administration, radiology, pharmacy, medical records) and perform these tasks manually. Not only is this approach time-consuming and costly, it also results in interruptions to clinical staff and increases the potential for human error.

Managing software deployment

In a hospital environment with numerous systems and mobile devices, software deployment is also burdensome, requiring a manual approach. When IT removes a device from service to evaluate operations, install or update software or patches, or troubleshoot problems, the resulting downtime reduces medical staff productivity, increasing costs and affecting continuity of service.

To maintain its technology base on more than 650 servers and 6,400 hardware devices without increasing IT expenses, Horizon Healthcare Services in Newark, New Jersey, needed a way to reduce overhead, save money, decrease IT work hours, and increase productivity. By adopting a centralized client management solution to replace two disparate management systems and reduce the time required to deploy images, Horizon's IT department improved their software delivery success rate from 60 percent to greater than 90 percent, and technicians can now image PCs in minutes rather than hours. The company also saved thousands of dollars in server purchases, hardware and maintenance costs, and monthly licensing fees.³

³ Horizon Healthcare Services, customer success story.

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Following acquisitions or mergers, the hospital IT staff needs to implement virtually flawless migrations to maintain data integrity—identifying what equipment exists, creating a migration strategy, gathering existing data, storing it, and then migrating the data to other systems. Inefficient migrations can translate into configuration challenges, application incompatibilities, redundant information, poor quality of data, inaccurate matching of data to new system requirements, and loss or corruption of data.

Managing regulatory compliance and security

Without a centralized client management system, IT has to discover and track all devices manually to stay in compliance with Health Insurance Portability and Accountability Act (HIPAA) requirements, Sarbanes-Oxley (SOX), and other regulations. Software installed on computers must match the software licenses the hospital has purchased, and IT needs to install updates and patches as they become available. Additionally, because today's hospital workforce is increasingly mobile, maintaining the security of computer-based patient records (CPR) is more challenging. The constant threat of spyware, viruses, and illegal or unauthorized software loaded on computers is an ongoing concern for IT departments that manage thousands of client devices individually.

A centralized IT management solution enables hospitals to deploy software and patches to individual devices with minimal downtime and disruption of hospital operations. Managing clients remotely and automatically allows IT departments to perform maintenance tasks transparently in the background, minimizing interruptions to service and clinical staff.

Meeting challenges through consolidation and automation

The most successful approach to managing IT lifecycles in a hospital environment is to implement service-oriented management from a central location to control all of the resources located on servers throughout the hospital. Standardizing and automating management saves IT time and expense, reduces errors, and eliminates the lengthy downtime required for individual system maintenance.

Centralized control allows IT to gain visibility into an organization's system infrastructure to manage the lifecycle of clients, mobile devices, servers, and network devices more efficiently, regardless of their location. Providers can automate low-level processes (such as installing software, updates, and patches) to help ensure consistency and reduce deployment failures. Automation leads to seamless IT processes that are invisible to end users, minimizing interference

HealthNow, one of New York's leading healthcare companies serving nearly one million members, wanted to upgrade 2,300 workstations to a new operating system. The IT department calculated that the migration would take several months and severely impact productivity, with technicians migrating only 10 machines a day. But after implementing discovery combined with a comprehensive client deployment solution, HealthNow was able to automate processes to migrate 40 machines a night and more than 100 over a weekend, reducing migration time by 90 percent with no downtime to affect end users. By reducing the time required for individual installations and upgrades, the hospital could reallocate IT personnel to other projects more critical to organizational goals. "This solution has made our department and thus our company more effective and more productive," says Donald Rowland Sr., SR Technical Support. "As a corporate IT group, we are an expense to the company. So the more efficient and accurate we are, the more money we save." ⁴

⁴ HealthNow New York Inc., customer success story.

with clinicians' tasks. Adopting a service-oriented management solution integrates people with processes to support the hospital's business objectives (see Figure 2).

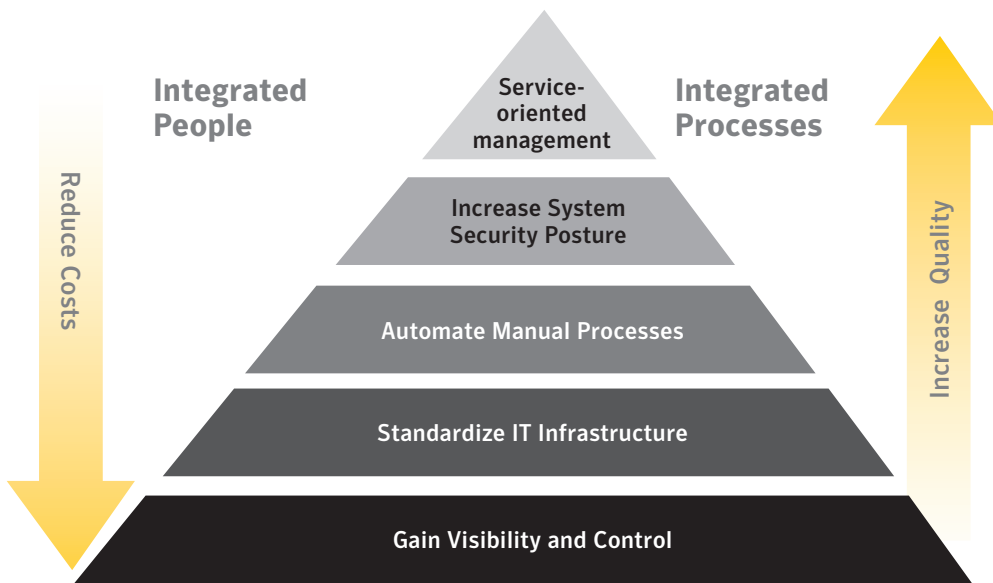


Figure 2: Integration leads to supporting business needs.⁵

Designing and implementing a change configuration plan using a client management solution enables healthcare providers to produce a comprehensive inventory of IT resources, increase asset availability and productivity, and automate backup and recovery. Centralized management allows IT to better understand and manage device configurations remotely without interrupting hospital operations.

Because security and regulatory compliance are major considerations in today's hospital environments, a centralized client management solution provides a solid foundation for ensuring compliance and maintaining the integrity and privacy of client data. Automated deployment and inventory processes facilitate software management, patch management, and license optimization (see Figure 3).

⁵ Altiris Client Management Suite presentation, Symantec, June 2006.

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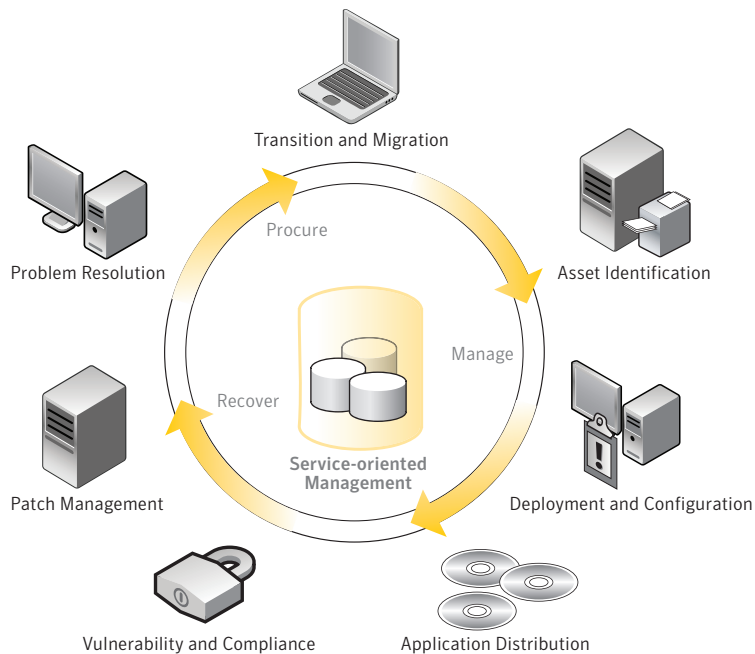


Figure 3: IT lifecycle management.⁶

With a centralized management solution, IT can easily track software that end users install on a computer to avoid conflicts with other software, and then lock down a computer if necessary to prevent unauthorized changes.

Acquisitions and mergers are an important part of meeting strategic objectives for many healthcare providers, and ensuring a successful migration is a key component of combining new equipment with existing IT systems. By standardizing processes and ensuring well-managed PCs, providers can eliminate technology overlap and ensure data security, reducing total cost of ownership by avoiding unnecessary purchases and streamlining IT involvement in system maintenance processes. An extensible architecture that is easy to learn results in faster migrations and reduced IT expenses. An ideal client management solution allows providers to purchase products together as a suite or individually as needed.

⁶ Altiris Server Management Suite presentation, December 11, 2007

Benefits of a preferred solution

Adopting a best practices solution for managing IT lifecycles helps reduce the time required for software deployment and management, and automation decreases software deployment failures. Troubleshooting is simplified, translating to shorter desktop downtimes and less disruption of clinical hospital operations. Centralized management provides IT departments with access to large amounts of data to answer questions and increase support for remote devices.

With standardized desktop configuration and server operations, providers can consolidate software license agreements and facilitate compliance with regulatory requirements. The ability to perform imaging and reimaging using standardized image files helps ensure that system migrations can be completed quickly, efficiently, and successfully. Managing clients through a centralized solution also simplifies IT asset discovery and enables IT to be more accountable for end-user devices. Table 1 summarizes the benefits of adopting a centralized solution for managing IT lifecycles.

Table 1: Benefits of a centralized client management solution.

Challenges faced by hospital IT departments	Service-oriented solution	Benefits of the solution
Creating a centralized inventory of multiple devices in a heterogeneous environment on an individual basis is time-consuming and costly	Centralize client management online in real time	Speeds inventory, reduces errors, and saves IT expenses and labor hours
Migrations are time-consuming, labor-intensive, error-prone, and costly due to systems being taken offline and devices being migrated individually.	Consolidate and automate processes.	Results in migrations that are timely and cost-efficient, with fewer errors and minimal downtime
Manual software installations and upgrades are slow and subject to errors, place heavy demands on IT, and result in significant downtime and interruptions to clinical staff.	Automate software deployments from a centralized location.	Makes installations and upgrades faster and easier, with fewer errors, simplified status reporting, less IT involvement, and fewer interruptions to end users
IT resources are overburdened and IT budgets are stretched by increasing demands.	Automate low-priority processes.	Enables reallocation of IT resources, resulting in lower costs and increased IT strategic focus
Help desk tickets require technicians to visit devices physically to troubleshoot, upgrade, and install patches and fixes	Employ comprehensive IT lifecycle management tools	Allows remote troubleshooting, upgrading, and installation, reducing time and costs required to resolve problems
Multiple users and mobile devices result in vulnerable endpoints, risks to the security and integrity of CPR, and the threat of spyware and viruses	Centralize the management of multiple clients and mobile devices.	Helps ensure data integrity and secure endpoints
IT must manually discover and track devices to ensure regulatory compliance and to validate software licenses.	Centralize control and automated processes.	Simplifies the management of multiple devices and contributes to compliance

Case Studies

Increased flexibility helps MedCentral meet strategic objectives

MedCentral Health System in Mansfield, Ohio, is a nonprofit organization composed of two acute care hospitals with a combined total of 351 beds and 42 bassinets. Located between Columbus and Cleveland, MedCentral is the largest employer in Mansfield, with more than 200 medical staff offering a complete range of primary care and specialty practices.

As part of a US\$30 million IT upgrade focused on bringing technology to the forefront of healthcare, MedCentral added hundreds of new end-user devices such as wireless laptops and patient care carts for clinical areas. The ever-expanding complexity of the environment was placing a tremendous burden on IT personnel, who had to deploy the new devices while still carrying out the normal tasks of imaging new computers and reimaging existing ones. MedCentral's business strategy involved expanding their market and looking into offering other service lines to provide patients with the same level of care locally that they would receive in a large city hospital.

MedCentral adopted a centralized client management solution that enabled IT to support the organization's strategic objectives by allowing them to inventory all client devices and integrate the new with the old as quickly and invisibly as possible. They can now standardize all clients on one image, consistently across all devices, and deploy that image automatically with confidence. The solution allows them to perform maintenance tasks that are transparent to end users, decreasing interruptions to clinicians and significantly reducing IT hours.

Prior to implementation of the client management solution, manual deployment processes required four to eight hours to complete. By installing system upgrades and patches with a single batch program overnight, MedCentral has realized a 75 percent reduction in IT staff hours, and the upgrades are seamless and efficient. The ability to maintain and upgrade systems remotely also allowed MedCentral to transition their help desk from simply ticket tracking to a full-service system, increasing response times and reducing system downtime.

Andrew Fournier, MedCentral's Desktop Support Supervisor, believes the new solution has provided IT with the flexibility and control to support the hospital's strategic objectives. "With some of the changes we've gone through over the past three years, I simply can't imagine being able to do what we do now on a daily basis with five people without having a client management solution in place," Fournier says. "We can do so much from our desks now that we couldn't do before, and the improvement in our ability to streamline IT processes is absolutely phenomenal." Fournier adds that avoiding interruptions to hospital staff also offers the intangible benefits of increased morale and end-user satisfaction, which improves staff and clinician perceptions of IT.

Consolidation and automation offer Mercy a competitive advantage

Mercy Health Services is a 235-bed full-service medical facility that has been located on the same city block in Baltimore, Maryland, for 130 years. In the past few years, Mercy has grown rapidly, with a diverse number of applications in a heterogeneous environment complicating end-user support. Imaging and software delivery applications were bulky and slow because the expanding environment was managed through separate solutions in application deployment, patch management, imaging, software and hardware inventories, and help desk troubleshooting.

Mercy deployed a centralized client management solution that allowed them to consolidate six point solutions into a single, integrated solution. The reduced time and expense for imaging and deploying new machines made it much easier for IT to keep pace with the hospital's rapid growth. The ability to manage IT from a single location dramatically improved the ability to inventory IT resources and track software licenses to help ensure security and regulatory compliance.

Managing IT resources from a single console is particularly helpful for the help desk team because it reduces the number of help desk tickets demanding manual attention. "Automating trivial processes has allowed us to redeploy the human resources needed to help our clinicians learn new technologies as we adopt them," says Matt Giblin, Manager of Enterprise Systems Management. "Instead of technicians going deskside to fix problems, they can now go deskside to support the clinicians and coach them in learning technology they need to know in order to remain competitive in the healthcare business."

Mercy's solution is an excellent example of an organization moving to adopt a service-oriented approach to technology, as illustrated in Figure 1. The hospital's strategic business objectives are centered on growth, and the diversity of complex applications continues to increase as the end-user base becomes more dependent on IT resources. The client management solution Mercy implemented provides all the tools necessary to troubleshoot applications and operating system issues consistently and efficiently. It is less intrusive and therefore will minimize the impact on clinicians and end users as the hospital's infrastructure continues to grow and become more sophisticated.

Conclusion

In the face of a constantly changing healthcare landscape, aligning IT objectives with strategic organizational objectives demands flexibility. Hospital IT departments face numerous challenges resulting from rapidly evolving technologies, continually expanding networks, increasing numbers of end users, limited IT resources, the advancing encroachment of potential threats to security and integrity of patient data, and regulatory compliance demands. To meet those challenges, providers need to implement the following best practices:

- Adopt a service-oriented client management strategy.
- Centralize inventory management and control of IT resources.
- Standardize and control the administration of processes.
- Automate remote installation of software and patches.

By using a client management solution, providers can better secure the healthcare environment and support end users in their mission of providing expert care to patients. Table 2 provides a list of solutions that meet the needs of the three IT lifecycle phases.

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Table 2: Enabling technologies for a preferred solution.

IT lifecycle phase	IT lifecycle management need	Symantec™/Altiris™ solution
Procure	Operating system imaging, deployment, and configuration	Deployment Solution
	PC personality and operating system migration	PC Transport
	Comprehensive inventory of software and hardware, including desktops, notebooks, and handheld devices	Inventory Solution
Manage	Policy-based mobile software delivery	Software Delivery Solution
	Patch management	Patch Management Solution
	Application self-healing and repair	Application Management Solution
	Technology assessments and license audits	Security Expressions tool
	Standardization of application packaging to avoid conflicts and customize applications to meet organizational needs	Wise Package Studio Professional
	Application usage and denial of service	Application Metering Solution
	Web-based remote control and file system synchronization	Carbon Copy Solution
	Real-time diagnosis and remediation	Real Time System Manager
	Application virtualization management to instantly activate, deactivate, or reset virtual applications	Software Virtualization Solution
	Management of migration to Symantec Endpoint Protection to end-user computers	Symantec Endpoint Protection Integration Component
Recover	Networkwide backup and disaster recovery and cross-hardware recovery	Recovery Solution

About Symantec

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