INTRODUCTION

At the start of 2011, the U.S. healthcare IT industry is at a crossroads. The American Recovery and Reinvestment Act of 2009 (ARRA) created incentives for the adoption of point-of-care computing solutions including electronic medical records and electronic health records (EMRs/EHRs), computerized physician order entry (CPOE), and health information exchange (HIE) by providers. The available ARRA incentives and the tight deadlines required to implement and demonstrate meaningful use of clinical applications have resulted in a proliferation of point-of-care computing, endpoint devices, and data as providers move data historically held in paper charts and records into electronic format.

For most providers, meeting the requirements for meaningful use under ARRA will mean adding a new clinical solution, migrating from an existing clinical solution to one that will meet the requirements and reach adoption levels for meaningful use, or adding new functionality and enhancing adoption of existing clinical solutions. In all cases, providers will be faced with dramatically increased amounts of clinical data to manage and will need application archiving and data retention and compliance capabilities in order to contain storage costs for data while meeting the clinical and regulatory requirements for data retention and access.

The clinical systems that providers are implementing are complex legacy systems with challenging architecture and support issues. At the same time, the demands on availability, uptime, security, mobility, and performance for point-of-care computing are high, while the budgets to implement, secure, and manage the data required to run these applications are small. For provider organizations, tools that drive improved performance of the new clinical applications as well as improve data security and create efficiencies in the management of clinical data are increasingly becoming critical for healthcare organizations. Database archiving and legacy application retirement technology is increasingly being used by providers to realize these advantages.
ARRA Drives Spending on Clinical Systems

ARRA, when enacted in 2009, promised strong growth in investment in EMR/EHR, HIE, and CPOE with over $20 million in funding available. These technologies had long been considered promising for their impact on patient safety, efficiency of healthcare delivery, and quality of care, but they had proven disappointing when health systems considered the dismal return on investment (ROI) associated with investing in them. The incentives provided by ARRA and the future penalties for nonimplementers have clearly tipped the balance toward investment and driven healthcare providers along a path to implement these technologies at record levels.

ARRA stimulus payments are conditional upon implementing an eligible EMR/EHR product and demonstrating meaningful use of a certified product. The definition of meaningful use stated in the bill includes use of a certified product; use of functionality for electronic prescribing (eprescribing); active exchange of health information; active, electronic reporting of quality measures consistent with the requirements as defined by the U.S. Department of Health and Human Services (DHHS); and other criteria, yet to be finalized, as determined by the secretary. A final rule for meaningful use phase 1 was published in July 2010, but the details of the requirements for the subsequent two phases of meaningful use have yet to be finalized by DHHS at the time of this document.

Clinical Solutions Require Proper Attention to Data Growth and Application Portfolio Management to Succeed

As the healthcare industry seeks to implement and drive widespread adoption of clinical computing, performance and accessibility of data for clinicians are critical, yet the demands and costs of maintaining large volumes of electronic clinical data are growing. With increasing implementation of clinical systems including EMR/EHR and CPOE, data volumes are growing exponentially for providers. In the hospital environment, solutions like database archiving and legacy application retirement management are increasingly playing a role in allowing healthcare organizations to move to EMR/EHR and CPOE solutions. Appropriate data management, database archiving, and retrieval strategies allow hospitals to provide applications and data in the clinical setting in a manner that bridges the gap between available IT resources and satisfaction of end-user requirements.

In the era of ARRA and healthcare reform, hospitals are implementing clinical solutions rapidly in order to meet the demand of meaningful use. For many hospitals, this means adding capabilities to existing
systems, but for others, this means replacing clinical systems and replatforming in order to put in place systems that are usable, meet clinician requirements, and are certified for and will allow organizations to adopt and use systems in a manner consistent with meaningful use.

In organizations with a single EMR/EHR in place, data growth presents a challenge; for organizations that are replatforming and facing both new EMR/EHR implementation and legacy application retirement, the challenge grows. Organizations that need to replatform to meet meaningful use requirements will be faced with the additional demands of making data available from the legacy EMR/EHR and CPOE applications to providers working in the new system. As the volumes of clinical data stored in clinical systems increase for all healthcare organizations — whether they are supporting a single active application or multiple active and archived applications — database archiving, legacy application retirement, data management, archiving, and retrieval present a challenge.

**Healthcare Organizations Need Database Archiving and Legacy Application Retirement Solutions to Support EMR/EHR and CPOE Implementation**

As the use and implementation of clinical systems grows, providers are increasingly faced with the challenge of managing large volumes of data stored in EMR/EHR and CPOE systems. These large data and image storage volumes have led to increased storage costs and data management issues for provider IT organizations. However, despite escalating data volumes and storage costs, and the fact that a large proportion of data can be made available for archiving in most organizations, few providers have made use of application and database archiving solutions. In an IDC study conducted in 2010, 53% of providers reported that they did not archive inactive EMRs/EHRs to an archive storage tier (see Figure 1).
Undoubtedly, the lack of adoption of archiving solutions is likely due to the relatively new nature of the problem as well as limitations on the applications involved. While picture archiving and communication systems (PACS) remain the largest consumer of storage in the healthcare organization, the proprietary nature of most PACS image repository solutions and limits on compression of images have made extensive archiving of PACS images difficult. In most provider organizations, EMR/EHR and CPOE is much newer technology and has not gone into widespread adoption, so data volumes have not reached the point where they have become problematic, and there has not been much investigation of archiving solutions. However, the ARRA deadlines and timelines will drive more healthcare organizations into widespread adoption of EMR/EHR and CPOE, and as the volume of electronic clinical information grows, so will the need for storage and archiving solutions. Healthcare organizations should expect growth in the data volumes associated with EMR/EHR as adoption grows to levels required to demonstrate meaningful use in phase 1 and subsequent phases. For organizations that have chosen to replatform to meet meaningful use requirements and timelines, archiving of data from the retired application is also critical.

Adding to the need for proper archiving of EMR/EHR and CPOE data are the requirements for retention of this data and confusion about regulatory compliance in this area. Retention requirements for medical data vary from state to state, and provider organizations often choose to adopt their own compliance policies to retain data for longer in order to have it available for medical research or legal discovery. A summary of state retention policies is available at

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**FIGURE 1**

Use of Archiving by Providers for EMR/EHR Data

Q. Do you currently archive fixed, no longer accessed EHRs/EMRs to an archive storage tier?

![Diagram showing archiving percentages](image)

Yes (47.0%)  
No (53.0%)

n = 122

Source: IDC's EMR and PACS Storage Survey, 2010

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http://library.ahima.org/xpedio/groups/public/documents/ahima/book1_012547.pdf. The data retention policies of individual provider organizations vary widely, but in an IDC study conducted in 2010, the majority of providers, 63%, indicated that their current policy for EMRs/EHRs is to keep them forever and never expire them (see Figure 2). Even among those provider organizations that do have compliance policies in place that would allow for expiration of records and reclamation of storage capacity, many do not have the technology in place to actually perform the archiving.

**FIGURE 2**

Retention Policy for EMRs/EHRs

Q. What is your organization's practice for retaining EHRs/EMRs?

- Keep forever, never expire
- Keep as long as mandated, expire but no processes
- Keep as long as mandated, then expire and reclaim storage

n = 122

Source: IDC's EMR and PACS Storage Survey, 2010

Given the trend among provider organizations to keep records indefinitely, it is quite clear that current adoption of EMR/EHR and CPOE technology and the quantities of electronic data these new systems are generating will require the adoption of archiving solutions in the future. However, adoption of these systems is hampered by issues concerning organizational compliance policies, data availability and retrieval processes, and the advent of appropriate technology for performing application and database archiving when working with legacy clinical systems.
BENEFITS

There are clear benefits for provider organizations that choose to implement application and database archiving technology solutions. They include:

- **Efficiencies through data management.** Using appropriate data management technology will allow provider organizations to perform legacy application retirement and database and application archiving in compliance with their organizational policies. In turn, this will allow IT to compress data in archives, reclaim associated storage space, reduce the amount and cost of storage space, and create efficiencies in the datacenter.

- **Ability to meet goals of ARRA and healthcare reform.** As providers move toward implementing new clinical solutions to meet the requirements of meaningful use, concomitant implementation of data management and archiving solutions will allow providers to leverage efficiencies in the storage environment to fund clinical projects and meet the goals of ARRA and healthcare reform.

- **More effectively and efficiently meet regulatory requirements.** Database archiving solutions will allow providers to meet regulatory and organizational retention requirements for retention of clinical data. Having data on hand and safely and securely managed in archives allows providers access to data when needed, whether for ongoing clinical care, legal discovery, or other purposes. Database archiving solutions also help automate the retention and disposal of data in a timely manner to reduce legal risks.

- **Cost savings resulting from legacy application retirement.** Legacy application retirements create cost savings for healthcare organizations that result from the elimination of maintenance contracts associated with legacy, retired hardware and software and from the reduction in FTEs to manage applications and datacenter costs.

- **Ability to meet needs of clinical, administrative, financial, and IT stakeholders.** Application and database archiving technology solutions will allow providers to meet the needs of clinical, administrative, financial, and IT stakeholders. For clinical and administrative stakeholders, application and database archiving should be seamless, with access to archived data from within applications on an as-needed basis. For financial and IT stakeholders, savings and efficiencies achieved from an archiving strategy can be applied to investments in other technologies and resources to meet organizational goals.
CONSIDERATIONS

Provider organizations considering adding application and database archiving tools to their data management strategy should consider:

- **Compliance with retention policies.** Providers need to consider HIPAA requirements for patient privacy and data protection, as well as state regulations for medical record retention in the states in which they operate. In addition to federal and state regulatory compliance, individual organizations may have specific legal interpretations and policies in place that affect the archiving strategy. Archiving strategies should be appropriate and in compliance with the organizational, federal, and state requirements.

- **Compliance with HIPAA requirements for data privacy and security.** Providers need to ensure that archived clinical data enjoys the same security as current clinical data under the HIPAA regulation. Whether archives are onsite or in the cloud, penalties and enforcement for breaches of personal health information (PHI) will apply; therefore, appropriate security provisions need to be in place.

- **Ability to retrieve historical data when needed.** Providers must consider the need to retrieve historical data from archives. Historical data may be needed by clinicians delivering care, and retrieval options need to allow for fast, accurate retrieval of information, whether from clinical systems still in use or from retired applications. Retrieval times should be in line with the requirements of providers at the organization. In addition, retrieval of archived clinical information may be needed for financial or administrative purposes or in cases of legal discovery, and provisions need to be made for these uses.

For individual provider organizations, additional considerations may apply, and organizations should always consider the individual concerns of the organization when planning an application and database archiving strategy.

SOLUTION DESCRIPTION

Informatica provides a solution for database and enterprise application archiving and EMR/EHR application retirement in the healthcare provider industry. Informatica Data Archive is a scalable software solution that helps IT organizations manage the proliferation of data volumes in a variety of enterprise applications. The software enables IT teams to archive structured data in databases, enterprise applications, data warehouses, and files — including reference, transactional, and related unstructured data, such as images, audio, documents, and other types of attachments — and then access it when needed. All access to retired data is tracked and audited to establish a chain of custody.
Informatica Data Archive also automates the enforcement of retention and disposition policies while following an approval process for the purging of expired data, automating compliance. Informatica Data Archive allows IT to move inactive data to another database or to a secure, highly compressed, immutable file. Application-specific business rules help ensure that data integrity is maintained after data has been archived.

According to Informatica, the company currently serves both providers and payers and its client base includes over 50 providers that use its provider solutions. Informatica's provider solutions include EMR/EHR data conversion and migration tools and services and data transformation engines that support HIPAA 5010 and ICD-10 crosswalk and conversion services, in addition to database archiving and legacy application retirement solutions. For healthcare organizations interested in database archiving and legacy application retirement solutions, Informatica provides data growth analysis services that can help healthcare organizations gain insight into the current state and future growth of applications, simulate the application of archiving policies on data, and calculate the expected ROI of implementing archiving policies. Informatica's solutions for database archiving and legacy application retirement include validated, multitiered information life-cycle management and cloud storage options, as well as a business rules engine for implementing, applying, and maintaining organizational archiving policies.

Informatica's products utilize healthcare provider industry standards including HL-7, HIPAA 4010 and 5010, and ANSI X12. Informatica partners with leading suppliers to the provider industry, including companies such as Oracle, EMC, SAP, Microsoft, and Cerner. The company has extensive experience in providing database archiving and application retirement across multiple industries and has developed competencies in the provider industry, offering specialized capabilities for supporting EMR/EHR application retirement and database archiving.

**CONCLUSION**

With stimulus funding in the mix, the outlook for investment in healthcare IT is strong for 2011. Although hospitals have been slow to adopt EMR/EHR technology, they are moving ahead in order to implement and meet ARRA implementation timelines and to prepare for healthcare reform. As EMR/EHR and related system implementations continue, the volumes of electronic data maintained and managed by healthcare organizations are growing and so is the need for intelligent database archiving and retrieval strategies.

Going forward, healthcare organizations will need to look carefully at the growing volumes of clinical data within their organizations and should consider the impact and potential ROI of implementing
archiving policies and associated technologies. Database archiving and legacy application retirement strategies can help manage the growing volumes of data in healthcare organizations while maximizing the productivity of both IT and clinical resources. Tiered information life-cycle management and cloud storage solutions can lower costs and add flexibility to storage of large amounts of data. The benefits that accrue from appropriate database archiving and application retirement strategies include data availability and cost savings that will help stretch IT resources and capabilities, assist in regulatory compliance, and add security measures that will help control data access in the expanding clinical computing environment.

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