

Getting Ready For EHR

A best-practice approach to your IT infrastructure is the best preparation for the changes ahead in healthcare... whatever they are.



Electronic Health Records

The Infrastructure Imperative

Everyone has an opinion about how to save healthcare in the US today, and every opinion has the potential to significantly impact healthcare IT departments. Healthcare IT professionals already feel as if they are performing technology triage in a war zone. Add the prospect of having to meet some criteria for some unknown amount of money earmarked for electronic health records (EHR) in the American Recovery and Reinvestment Act of 2009 (ARRA), and you combine several risk factors for high stress in one job description.

Waiting until all of the criteria for EHR are defined, and the uncertainties resolved, is not an option. What is clear about the stimulus package is that it contains both a carrot and a stick. Qualifying hospitals, for example, can collect up to an estimated \$18M depending on their volume of discharged patients. (Varying amounts are available to other healthcare organizations.) That's the carrot.

On the other hand, hospitals that don't invest in EHR now risk missing out on the first year of funding, and if they don't meet the federal requirements for EHR, they also risk being penalized 1 percent of their Medicaid and Medicare reimbursement per year for three years to a maximum of 3 percent beginning in the year 2015. That's the stick.

Call to Action

The hype associated with the ARRA can seem like a distraction, but those who are reading between the lines see it as a very real call to action. As confusing and unfinished as the ARRA may be today, it is possible to extrapolate a few key areas that justify taking strategic action now. Scott A. Wallace, an executive within IBM's Healthcare and Life Sciences division, identifies six critical conditions for healthcare IT:

- Interoperability
- Security
- High availability
- Business intelligence and healthcare analytics
- Enterprise portals
- Business continuity and disaster recovery

Each condition, Wallace says, is a prerequisite for "meaningful usage"—the overarching requirement for ARRA funds. Although meaningful usage has yet to be fully defined, in broad terms it refers to making data from electronic health records available to share within a hospital community (radiology, pharmacology, labs, etc.), as well as with associated physician and other clinical practices in a larger state and regional community, and to providing quality reporting.

Granted, plenty of "ifs" surround this condition. If data is to be shared, then interoperability between all of the disparate systems involved is essential. If all of that data is going to be made available, then it must be secure. If all of the various healthcare communities involved are going to be committing 100 percent of patient information to electronic records, then those records must be always available and instantly accessible. And if all of this holds true, then there won't be any paper backup because nothing will have been written down.

These aren't new challenges. Healthcare IT departments have been moving at different paces toward EHR for years. In fact, realizing the potential for EHR is what most healthcare CIOs envision when they aren't busy holding together an aging IT infrastructure. They know what they need to do.

At the end of the day, a best-practices approach to providing an efficient and effective IT infrastructure will put healthcare organizations in the best position to not only provide the best possible patient care but also meet the still-emerging criteria for ARRA stimulus funds.

Admittedly, the timing could be better. Healthcare IT departments are being asked to rise to the challenge of EHR just when the crisis in the economy has done to their budgets the same thing it has done to the budgets of their counterparts in other industries. Healthcare CIOs already had to live with the overarching mandate from physicians to keep their IT environments always available. Now they also have a mandate from their CFOs to do more with less—at the same time their users' expectations have been inflated to whole new levels by the hype surrounding the ARRA.



Opportunities to Save

Fortunately, most healthcare organizations have within their IT infrastructure many opportunities to implement new technology and management models that move them closer to delivering EHR, saving them money and making their infrastructure more efficient, effective, and easier to manage in the process.

“Even without stimulus money, there are opportunities for healthcare IT to improve performance,” says Logicalis Consultant Art Vinson, who is CPHIMS- and FHIMSS-certified.

“And if they improve IT performance, they will improve patient safety and patient care.”

Executed strategically, improvements in one segment of the infrastructure can leverage improvements in all of the others.

Take hospital data centers, many of which are in critical condition. For example, Logicalis Consultant Greg Murphy was recently told by one hospital IT director that he couldn’t support one more amp’s worth of servers in his data center. He was out of space and power.

Server and storage consolidation are the key elements of data center transformation, but for many healthcare organizations, the potential gains are largely unclaimed. For a variety of reasons, including major healthcare ISVs’ resistance to virtualization, healthcare organizations have not been as aggressive with consolidation and virtualization as their counterparts in other industries. That situation, however, is improving as more ISVs acknowledge their applications run just as well in a virtual environment as they do on physical servers.

“The lowest hanging fruit in healthcare is server virtualization and consolidation, storage consolidation and storage management,” according to Vinson. “These projects have no impact on users, and they can reduce power consumption, free up floor space, and reduce the time and energy required for backups and restores. Plus, it’s measurable.”

Logicalis partners IBM, HP, and Cisco have captive finance arms that are very effective in mitigating cash flow issues that hospitals face. As incentive to reduce energy consumption, some power utilities are offering significant rebates to organizations that undertake a comprehensive consolidation and virtualization initiative.



Further Reading

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“Prescription for Healthcare IT Data Storage Solutions Needed STAT”
www.us.logicalis.com/healthcare-IT

The savings can be dramatic. Logicalis Vice President Brandon Harris says an assessment Logicalis completed for a large healthcare organization in the West reduced the number of servers from more than 750 to 33, slashing the projected power bill for five years from \$1.3 million to \$77,000. If this same organization were in the Northeast where energy costs are much higher, then the savings would have been proportionately more dramatic, Harris notes.

Although limits on space and power are often the impetus for a consolidation and virtualization strategy, the full extent of consolidation's benefits go much deeper, including enhanced, centralized management. That, in turn, enables IT departments to deploy servers in minutes instead of in weeks, and to be generally more responsive to their user communities.

Volume of Data

The demand for storage in healthcare is already the stuff of CIO nightmares. Digital imaging technologies are a medical breakthrough that enable doctors to non-invasively probe inside the human body, but the sheer volume of data that medical imaging generates is causing headaches for the hospital IT professionals who have to figure out where to store everything. For them, EHR is like a booster rocket to the already soaring demand for storage.

"I've told healthcare clients for years that their storage needs are going to grow faster than they think," says Logicalis Consultant Vic Dermott. "I've never been wrong with that, and it has never been more true than it is right now." The technology is available. Rising demand for storage has been accompanied by an expanding set of options that ranges from tiered storage to full-scale medical archiving solutions (MAS) from both HP and IBM. The challenge is matching the right solution to a healthcare organization's IT environment and budget.

Fortunately, there are many incremental steps between tape drives and fully mirrored business continuity/disaster recovery (BC/DR) with replicated storage.

"What you have to do is reverse-engineer the solution in line with the hospital's economics in a phased way," Murphy says. "The key is to not take any lefts when the ultimate direction is a right." Just buying more storage is not the ultimate answer. "One of the best things that hospitals can do to hold down cost," says Logicalis Storage Consultant Chuck Gerstner, "is to clear out their junk drawers of all the unstructured data that otherwise get stored and backed up with the critical data."

For example, many healthcare organizations share an escalating volume of email, which is overrunning storage resources that could be used more efficiently for other needs. In the process of freeing up expensive, high-speed storage, an email archiving initiative can save money, mitigate legal liability, and transform email from a backup nightmare to a searchable data asset.

The Meaning Of "Meaningful Use"

According to the Healthcare Information and Management Systems Society (HIMSS), the "meaningful use of certified EHR technology" includes at least four attributes:

- A functional EHR certified by the Certification Commission for Healthcare Information Technology (CCHIT)
- Electronic exchange of standardized patient data with clinical and administrative stakeholders using the Healthcare
- Information Technology Standards Panel's (HITSP) interoperability specifications and the Integrating the Healthcare Enterprise's (IHE) frameworks
- Clinical decision support (CDS), providing clinicians with clinical knowledge and intelligently filtered patient information to enhance patient care
- Capabilities to support process and care measurement that drive improvements in patient safety, quality outcomes, and cost reductions

Holistic Approach

A holistic approach—not only to servers and storage but also to networks—is required to get the most from a consolidation and virtualization strategy. Certain advances in server and storage technology, for example, can't be fully realized unless they are aligned with advances in network technology, and vice versa.

The network is the key delivery mechanism for security, privacy, interoperability, and bandwidth — both wired and wireless—required by EHR. Logicalis Director of Cisco Practice Jim Dossias recommends conducting a detailed network assessment to establish the environment's readiness to support EHR. In many cases, an initial assessment might reveal weaknesses that could easily contribute to outages since an EHR implementation increases demands throughout the network infrastructure. The process Dossias refers to as “forensic networking” frequently identifies one or more crises in the making, many of which are the result of patches and other short-term repairs that postponed the original problem rather than solving it.

The extremely short change window in most healthcare organizations has made network maintenance, upgrades, and repairs especially challenging. Most hospitals have a few hours in the middle of one night a month to take down their networks. As a result, network engineers often feel as if they are putting their jobs on the line every time they have to run the change management gauntlet. No longer. According to Dossias, advances in networking, like stateful failovers and in-service software upgrades, eliminate the need to take down the network for maintenance and upgrades. A proactive approach to network maintenance becomes easier to support—a good thing, too, because there won't be time for applying Band-Aids to crises once EHR is implemented.

One Place to Look

There is no conflict between what hospitals need to prepare for EHR and what they need for an efficient, effective IT infrastructure. At the most basic level, pursuing one objective serves the other.

“The ultimate goal with healthcare IT infrastructure is to have one place to look for everything,” Logicalis' Dermott says. The same is true for EHR.

For example, Logicalis helped a major Midwest hospital complex transform its data center from a decentralized infrastructure that primarily served billing and administration to a centralized system that accommodates the hospital's full scope of needs, including one of the most advanced EHR capabilities in the healthcare industry. “There are people here who never use a pencil or paper,” Dermott notes.

Today the hospital system is served by two data centers with a dynamically partitioned IBM server and a SAN in each one. The two servers are connected by a single network over which all critical data flows. The two sites provide full replication for each other. “If one goes down or is taken down, it fails over automatically to the other,” Dermott says.

EHR Infrastructure Checklist

Among all of the uncertainties surrounding the stimulus bill, one certainty is clear: EHR is coming to your healthcare organization. You may have already chosen a certified EHR application. You may elect to participate in a local Health Information Exchange or Regional Health Information Organization. Many choices have to be made, with many unseen changes ahead. The best way to avoid being blindsided by the inevitability of EHR is to be prepared for anything with an efficient, effective IT infrastructure.

Attending to the following checklist will make it possible for you to set off on your EHR adventure with confidence.

- Determine if your infrastructure is ready to support EHR. Can you share it, store it, secure it, and report your results?
- Reduce infrastructure costs and improve reliability through consolidation and virtualization.
- Establish an effective storage management strategy for the entire life cycle of the EHR.
- Build a sound financial business case for getting to EHR sooner rather than later.

Help is available for every item on the checklist. For example, Logicalis offers an EHR Readiness Assessment to help prepare your hospital for the changes ahead. We have a proven methodology for conducting an objective review to help you prepare your healthcare enterprise for electronic health records and maximize the ARRA government funding available to you.

Where Your IT Infrastructure Meets EHR

The following checklist identifies key points where your IT infrastructure meets EHR. It could take years for all of the terms of the ARRA stimulus funds to be defined, but if you start now, you will be ahead of the game.

- Desktop, server, and storage consolidation and virtualization
- Network security, interoperability, and bandwidth
- Portal platform extensibility with service-oriented architecture
- Data management and analytics
- Quality reporting
- Data center efficiency, effectiveness, and manageability
- Business continuity and disaster recovery
- Application requirements and integration

The technology changes at this hospital were driven by the highest authority in healthcare. “The whole infrastructure was developed with patient care in mind,” Dermott says. “From one pane of glass, a physician can pull up a complete patient profile, including billing, insurance, X-rays, lab tests—basically everything that is known about the patient. Initially implemented with 3.5 terabytes of storage, which seemed like overkill at the time, the data center has been able to grow storage capacity one hundredfold in the past few years to 320 terabytes to meet the demands of digital images.” The hospital IT environment is one of very few to achieve HIMSS level 7 EMR implementation and demonstrate the meaningful use required by the ARRA for EHR.

Besides facilitating the care of patients, this data center is equally responsive to the hospital’s business needs. Like businesses in other verticals, hospitals frequently grow by acquiring other hospitals. As IT increasingly becomes a more integral part of every business, the ability to easily integrate an acquired organization’s IT can make or break an acquisition.

“Hospitals have to be able to integrate the systems of an acquired hospital or doctor’s practice; otherwise, the whole business case for the acquisition can fall apart,” Dermott says. “Business issues today are tied directly to technical issues much more so than ever before.”

Case in point: Logicalis’ Murphy was recently contacted by a hospital CIO who had just been given 30 days to integrate the IT environment of a 50-practice physicians clinic into the hospital’s infrastructure. The trend of consolidation within the healthcare industry is resulting in more CIOs facing similar challenges.

Managed Services STAT

As everyone in healthcare knows, having the right specialist available at the right time is often the key to a successful outcome. More hospitals are turning to managed services to outtask various aspects of infrastructure monitoring and management, enabling their internal IT departments to focus on the specific needs of their user communities. In addition to providing 24x7 monitoring, managed services provides a panel of highly trained IT infrastructure experts available on demand.

A good candidate for managed services is the “homegrown legacy application that everybody in IT hates because when it breaks, it’s really hard to fix,” Logicalis’ Vinson says. “That’s the type of application you want to have Logicalis manage for you.”

Connecting the Dots

However meaningful usage is finally defined, the underlying concept is that healthcare organizations will need to be able to show through detailed reporting that they can share the full range of patient data across their networks of physicians and other healthcare providers, regardless of where the data is stored and the system on which it is viewed.

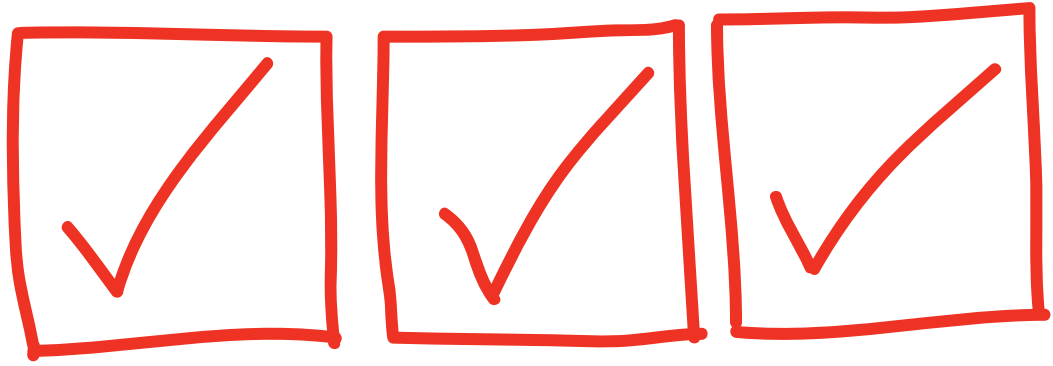
The enabling technology for the sharing of all of that data is enterprise portal technology. Most IT departments have experimented with portal development, but a deceptively treacherous gap looms between snapping together a few modules that look good in a pilot portal and developing a comprehensive portal platform that is robust enough to cope with all of the special situations and application incompatibilities that lurk beneath the surface, especially in healthcare IT environments.

Logicalis recommends treating a portal project with the same best-practices approach you would use for any major software development initiative, including the establishment of a steering committee to provide governance.

“Planning is key,” says Logicalis Consulting Director-IBM Dave Guerrero. “Every minute you spend on planning on the front end will save time on the back end; in most cases, it amounts to greater than one to many.”

Developed strategically, enterprise portals offer benefits for both the user community and IT. The primary benefit to users is secure access to the information they need on one screen without having to go through multiple logins. The primary benefit to IT is having a single platform to address instead of scores of application interfaces.

Logicalis Consulting Director-Portals Pat Simmons emphasizes that establishing a stable foundation is critical for portal projects because once one set of users sees that a well-designed portal makes their jobs easier, word spreads. Portal projects that start out as simple document management projects often evolve rapidly into an array of portals that spreads through an entire organization. The mandate for EHR will only accelerate that process.



Going Boldly

Of all of the technical capabilities healthcare IT professionals are being asked to master today, the key is an ability to adapt to change that, by all indications, is about to enter warp speed. The shape-shifting influence of national politics is only one of the many forces that promises to keep healthcare among the most challenging industries for IT professionals in the foreseeable future.

Doctors are not going to become any less demanding. If anything, their demands to use technology directly to help improve patient care are only going to increase. Rising with the demand for EHR are demands for computer physician order entry (CPOE) in hospitals and clinics, and telemedicine, which delivers healthcare beyond hospitals and clinics wherever it needs to be.

But here's one constant: Physicians will continue to want another new application or technology gadget. Every healthcare CIO has a personal horror story to tell of some doctor returning from a trade show with a "must-have" application that is incompatible with the existing IT environment.

In fact, a healthcare organization's ability to attract and retain physicians is going to be linked directly to its ability to aggressively use technology to expand the boundaries of patient care.

As a younger, more technology-oriented generation of doctors assumes authority during the course of healthcare in the future, IT is going to be drawn increasingly into the actual delivery of health services. As a result, IT professionals in healthcare will not be able to spend the bulk of their time caring for their IT infrastructures. The good news is that if the IT infrastructure is functioning efficiently and effectively, then the IT department will be able to focus its efforts directly on using technology to help doctors and nurses care for their patients.

The Bottom Line

At the end of the day, a best-practices approach to providing an efficient and effective IT infrastructure will put healthcare organizations in the best position, not only to provide the best possible patient care but also to meet the still-emerging criteria for ARRA stimulus funds.

A lot of the changes required for EHR are going to occur at the application level, and since healthcare IT directors don't generally get to decide which applications they will support, the next best thing is to establish a scalable IT infrastructure and "live with the mantra: applications will come, and applications will go," according to John Collins, director of commercial healthcare at HP (and the developer of the Medical Archiving Solution).

Providing a service-oriented architecture, he says, means that "the next time a doctor comes to IT with another must-have application, all you need to do is plug it into the environment and administer it on the back end. If you have a robust, open, extensible IT infrastructure in place, then any application can sit above it, so it doesn't matter what it is."

Collins recommends extending virtualization beyond servers to the desktop and handheld devices. "Someone is inevitably going to leave his or her portable in the coffee shop or want others to use the same device," he says. "If it is a thin client, there will be nothing resident on it. You can get the performance you need, and it can be upgraded and maintained centrally."



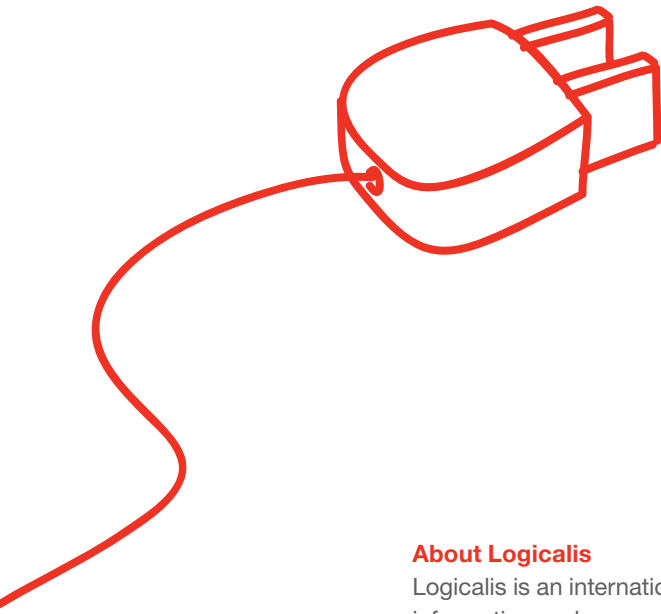
Further Reading

Visit
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Read
"Harnessing Portal Power for Your Organization" at
www.us.logicalis.com/ep

Read
For more information on the ARRA Meaningful Use criteria, please visit
<http://healthit.hhs.gov/portal/server.pt>

The healthcare industry is on the brink of a major transformation from which there is no turning back. Clearly, taking no action is riskier than taking some.



About Logicalis

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