



Developing a Secure, HIPAA Compliant Roadmap to the Public Cloud

Actionable insights on public cloud within an HIT environment



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The manufacturers of horse-drawn carriages knew their days were numbered. When they heard tell of Henry Ford's Model-T, they surely looked at one another, sighed, and began the process of going back to the proverbial drawing board. The era of automobiles had arrived.

Fast forward a century or so, and we see another massive transition taking place. For the past 50 years, healthcare organizations have invested heavily in mission-critical data centers, purchasing hardware, installing operating systems and software, paying close attention to cooling costs to keep all those expensive machines from overheating.

The salaries for professionals to run these data centers have long been a major component of human resource budgets. Without the right people running a data center, the business doesn't get what it needs, whether in terms of functionality or data; and that spells immediate and serious trouble. Employees become unhappy; partners look elsewhere; patient outcomes trend downward; and ultimately, the business fails.

The tremendous value of these data centers, and their impact on the success or failure of organizations, also led to a cultural schism which persists to this day. Often referred to as the IT-business divide, this dynamic has flummoxed even the most savvy consultants in the field of organizational development. Business people are like oil, IT folks like water: they just don't mix; or so the story goes.

There are many manifestations of the divide that affect operational efficiency. One of the most common is lack of agility, usually caused by the business wanting some new kind of functionality or data, but getting pushback from IT. Almost always, IT resists because new tools require cost new training, as well as the ongoing process of support; and new data carries a whole set of other responsibilities, like governance, quality, access, provisioning, even visualization.

IT's concerns are not unfounded. Any new application, and certainly any new database, will surely bring with it a whole new set of challenges and hurdles. End users understandably want to use the tools and systems they're comfortable using. Most professionals who work with data are already maxed out just keeping the trains running on time. Adding some new twist to their day job is therefore viewed in a negative light.

At the same time, business executives are often misled (if unintentionally) by the lure of new tools and platforms that can supposedly solve all their problems. Enterprise software vendors have become highly skilled at designing, marketing and selling all manner of technology for managing data. Often, there is a gray area between what is promised and what is ultimately delivered. And sometimes, the tools just don't do what the marketing language promised.

Much of the pain associated with using new tech revolves around the time-intensive process of installing the applications or systems, testing them, training on them. In the world of on-prem data centers, this is a stark reality that simply cannot be avoided. There are hardware issues to consider as well, namely dealing with the boxes that already exist in the data center, let alone purchasing new ones, which is usually considered a capital expense (and by some in the corporate hierarchy, a veritable capitol offense).

The ebb and flow of an organization's personnel is also a factor. With traditional on-prem systems, documentation is often scarce, which means head knowledge becomes critical. The people who implement and operate systems are the ones who know how to use them, what they can do, and more to the point: what they cannot do. When these people leave -- whether for a new job, to retire, or for other reasons -- that head knowledge goes away.

As many IT teams have gotten more lean in recent years, the inertia has become more pronounced. Fewer full-time employees means fewer people who can tackle new projects. Frankly, it means fewer people to keep the lights on for the systems already in place. This creates a very precarious environment in which agility becomes a far-fetched dream. Companies in this position face storms in their near future.

Sky's the Limit

With necessity still driving invention, there is one place where these companies can turn for help: The Cloud. With some 30 years under the belt, cloud-based services have matured in all sorts of ways, especially over the past decade. In all the areas that count, cloud computing has improved significantly: durability, capacity, usability, functionality, design, and the all-important category on every business person's mind: cost.

As a result, both payers and providers are increasingly looking to the cloud for answers. Savvy organizations are putting together roadmaps that reflect thoughtful consideration of how, when and why to port which services away from on-prem environments and into the cloud. The situation is unique for each organization for a variety of reasons: business models and processes vary; priorities are different; and perhaps most importantly, the human factor dictates which direction a company takes.

The first question to ask is straightforward: Why move to the cloud? Here's one reason to keep in mind: Resistance is futile. Yes, that's what the Borg would say, from Star Trek fame. In the context of Healthcare Information Technology (#HIT), it's appropriate. Even the stodgiest health IT analysts are coming to grips with the reality that cloud computing will overtake on-prem data centers, sooner or later. The early adopters have gone there already; most companies will be there within five years; and the laggards? Let's not go there.

A whole set of answers relate to the value of expertise. In the on-prem world, companies needed experts for each major area of IT provenance: hardware, networking, systems administration, security, operating systems, virtualization, workload balancing, data integration, data cleansing and quality, and then all the function-specific applications that drive everyday business in the world of healthcare. Add it all up, and you can see why IT would resist change.

Almost all of this complexity inverts with the cloud. With the exception of business applications, and some serious issues around data management, the cloud solves most of these challenges "out of the box" - so to speak. Taking each category one at a time, let's examine why:

- **Hardware:** The heart and soul of cloud computing, hardware forms the backbone of every data center, virtual and otherwise. Whether for public or private cloud - even in the case of hybrid - hardware is the raw material that gets things done. Anyone who has ever spent time setting up a standard-issue application server will tell you that it's really not much fun at all; rather, it's more of a grind.
 - **Networking:** Still considered "black magic" by some of the smartest consultants in the world, this fundamental component of data center infrastructure is front-and-center in today's world of big data. After all, many of the solutions that enable the slicing and dicing of data lean heavily on the network for moving data and instructions around. While the trend is to move processing to the data, reality on the ground still speaks otherwise.
 - **Systems Administration:** Simply put, we're still learning to speak silicon. While people outside the world of IT might maintain a rosy picture of just how clearly techies can "see" how systems work, the bottom line is that systems administration has only recently emerged from the dark ages. We are just now seeing tools that can help troubleshooters reliably solve issues related to root cause analysis. The role of sys admin remains safe.
 - **Security:** Easily the fastest-moving and most dangerous realm of enterprise computing, this was long considered the big fear for companies looking to the cloud. Wouldn't those massive, far-off systems be especially vulnerable to bad guys everywhere? Today, with major corporations and government agencies alike falling victim to massive hacks on a regular basis, it's becoming ever more clear that cloud providers are likely the best equipped to deal with this. All things considered, they have the most to lose.
 - **Operating Systems:** Who out there enjoys switching to a new OS? If two percent of you raised your hand, that number would be alarmingly high. Almost no one likes to upgrade their OS, as Microsoft learned when IBM invested a billion dollars to bolster Linux. Word on the street is that Big Blue made back that investment in less than one year. Microsoft seems to have
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learned its lesson, and its answer is? Azure. Savvy readers also recently noticed Redmond openly embracing open-source and the cloud.

- **Virtualization:** One of the most disruptive software forces of the past 20 years, this approach may well have been the last gasp of data center thinking. No, it's not going away any time soon; in fact, perhaps never. But in many ways, virtualization is being subsumed by the cloud right alongside all the other aspects of enterprise computing. Virtual desktops are the latest craze; and if you sense a similarity to the dumb terminals in the mainframe days, your powers of perception are strong, indeed.
- **Workload Balancing:** In much the same way that modern data professionals grapple with the so-called work-life balance, so too do machines and targeted applications wrestle with the ever-present challenge of workload balancing. This is one highly practical area of machine learning, arguably the most-hyped technology of 2016; but nonetheless a relative greenfield for dealing with some of the hardest nuts in data center and cloud environments.
- **Data Integration, Cleansing and Quality:** Long the bane of data management projects, moving data from one place to another is expensive and error-prone. Any time you move data anywhere, there are a whole host of issues that come into play. Data quality becomes an ongoing process, instead of a once-and-done. But in the cloud? If designed properly, a cloud-based solution can be the golden source of record, thus minimizing all of the down sides of integration and cleansing.

When dealing with on-prem systems, organizations need people who specialize in each and every one of these categories. They also need tools and processes for managing everything. In even the most well-funded, expertly resourced data center environment, this is a huge challenge. Any one weak link can cause havoc on the business. Each and every component must be in solid working condition for the business to run smoothly.

In the cloud, especially with a mature cloud vendor, the vast majority of these concerns transfer away from the business, and

over to the provider. No longer must the organization concern itself so much with hardware, operating systems, security, operating systems, virtualization; or issues like workload balancing and the seemingly never-ending process of data movement, integration, cleansing and quality. Instead, the business can focus on what it does best: the business.

This is the domain of those function-specific applications. In a cloud-oriented healthcare environment, companies can focus the bulk of their attention on these business-specific applications. That allows organizations to fine-tune their business models, understand where and how they can achieve competitive advantage, and thus not only survive, but thrive.

All of this is not to say that IT goes away. Rather, the role of IT professionals shifts toward serving as a liaison between the cloud providers and the business. This is a crucial role, because functionality is updated constantly in the cloud, and someone on the business side must stay abreast of these changes. Further, IT must focus its attention on ensuring that the business-specific applications are doing what they should, and employees are fully trained. This is especially true with respect to the ongoing criticality of compliance.

HIPAA Compliance

Many healthcare professionals have asked the question: Is there such a thing as a HIPAA-compliant cloud? The short answer is yes. With mature cloud providers, the ability to design, implement and manage governance rules for data and procedures is baked into the architecture. Issues such as physical and network access, time stamping, as well as roles and responsibilities are centrally managed, and thus much easier to maintain than in on-prem situations. This lowers the bar for compliance-related issues, and gives organizations the controls necessary to keep the trains running on time, without excess risk.

From an auditor's perspective, cloud-based solutions can be easier to monitor and evaluate. The major cloud providers must ensure that their information and process architectures align with the

latest rules and regulations. Thus, as with other aspects of on-prem responsibilities versus the cloud model, much responsibility transfers over to the cloud provider. Thus, healthcare organizations can essentially share the risk, and therefore lower their own burden.

At the same time, serious cloud providers realize that to be successful, they must remain vigilant, and provide the kinds of tools and technologies that healthcare payers and providers need in order to manage their business. A common concept employed is the single pane of glass through which dedicated IT personnel can monitor and manage their infrastructure. Systems administration is getting easier, but still does require effort and care.

And the major cloud providers all realize that a hybrid world is evolving, not just with respect to on-prem and cloud services, but even multi-cloud environments. In the case of mergers and acquisitions; but also in the case of large-scale, heterogeneous environments, the instances of multi-cloud environments will remain prevalent. Consequently, there are standards and best practices evolving to help companies effectively manage such diverse architectures.

The straws are already in the wind. During a webcast recently with HealthDataManagement.com, Mark Johnston of Amazon Web Services mentioned a major healthcare organization that has already drawn a line in the sand: Within five years, he said, they will no longer maintain an on-prem data center. They will be entirely in the cloud. This is the kind of game-changing metric that will drive the transformation of healthcare IT. Watch for other organizations to follow suit. Cloud-based healthcare is the future.



About Us

ClearDATA is the nation's fastest growing healthcare cloud computing company. More than 310,000 healthcare professionals rely on ClearDATA's HIPAA compliant cloud computing HealthDATA platform and infrastructure to store, manage, protect and share their patient data and critical applications.

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