

**INFORMATION
GOVERNANCE:
INTEGRATED COMPUTING
PLATFORMS:
Trading Traditional Data Centers
for Infrastructure as a Service**

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PART 2 OF 3

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Computers and other associated technologies have become so thoroughly integrated with our daily routines, both personal and professional, that it's hard to imagine life without them. Yet, despite our dependence on current gadgetry, we're also poised at the edge of a computing evolution, which some have dubbed the "Post-PC Era." Cloud-based devices, mobile apps, and the increasing functionality of tablets and smartphones are all moving front and center as we migrate further from traditional desktop computers and laptops.

Desktops and laptops have now been dubbed "thick" clients, as compared to the thin and zero clients afforded by virtualization. While the forecast is definitely predicting a shift away from this type of computing, there are still definitive benefits to using a thick client:

- **Offline Capability:** Unlike thin and zero clients, a constant connection to the server isn't essential when working on traditional computers; occasional connection is sufficient, offering full functionality even when offline.
- **Lower Server Requirements:** Thick client servers take care of most of the application processing, so they don't require the high performance server level as thin and zero clients do. This translates to much less expense; fewer servers are needed as well, since each server has a lighter workload.
- **Better Performance:** Functions that need a lots of bandwidth, such as gaming and other multimedia-rich applications perform better with full server thick-client access.



With all these benefits, why is there a distinct shift away from thick clients and toward thin and zero clients and Cloud-based devices instead? Although desktops and laptops are capable of more than anyone could have imagined in the early days of computing, the way we use that technology has changed drastically. With that shift, new solutions have been developed to fit emerging needs that have suddenly appeared.

More companies are incorporating telecommuting as a standard business practice, which means employees need devices that offer far more flexibility and transportability than thick clients can offer. Laptops are typically used to fulfill the role of computing-on-the-go, but now thin and zero clients offer a higher level of security, making them the preferred option for working remotely.

Along with changes in the physical workplace, the economy is changing as well and not just within the United States. Instead, businesses are becoming increasingly global as making available connections overseas and beyond are no longer limited by physical distance. Now that it's possible to edit documents and files in real-time across different continents, collaboration is closing the gap and making physical distances less relevant.

The bottom line is that thin and zero clients and IaaS (Infrastructure as a Service) are a better fit for the life we live now, and if existing trends continue, that will only become more of the norm in the coming years. Instead of traditional data centers, companies are migrating toward IaaS, using Cloud-based software that allows employees to connect virtually via the Cloud rather than linking up through physical servers.

Finding Definition in the Cloud

So what exactly are thin and zero clients? What constitutes a Cloud device? When just about every desktop or laptop is connected to the Internet anyway, is there really an essential difference among these options? Without getting overly technical, suffice it to say that thin and zero clients offer a more streamlined approach to Cloud collaboration than thick clients.

Basically, a thick client is a standard computer that can run thin client software. However, a thin client requires less maintenance than a thick client. Thin client hardware serves as a terminal to the back-end server, and virtual desktops are hosted in the data center. This makes thin clients easy to install; access to applications is simpler. At the same time, hardware needs are reduced (old PCs can be repurposed) for significant savings; it's far easier and cheaper to update software than hardware. Security is improved with thin clients also. Confused?



Thin clients are designed to be small and simple. They offer centralized management, so it's easy to apply policies to multiple clients at once. However, the downside of a thin client is that they get expensive quickly if adding a number of more advanced features.

Zero clients are like thin clients taken to the extreme. They require no configuration, store nothing and are more efficient than thin clients. This makes them far more cost-effective upfront, plus they use less power (as little as 1/50th of the requirements commanded by a thick client). Since there's no software, there's no vulnerability to malware. Like thin clients, administrators are able to reduce hardware needs significantly, running multiple virtual PCs on server-class hardware instead. Zero clients offer an efficient and secure way that central servers can deliver applications to end users.

Yet, despite the marketing of zero clients as a no-maintenance-needed solution, this definition isn't entirely accurate. Zero clients may require specific software and increased memory as well as other resources. There's also a risk that a zero client may be proprietary, creating potential compatibility issues.

Cloud computing services offer similar benefits to those of thin clients; however, data and programming information are both stored differently. While a thin client is based from a central computer, Cloud computing services are accessed remotely rather than physically. Data is stored in the Cloud, which uses far more robust hardware and is far more secure than a traditional data center.



Cloud services can be accessed from any device, which offers a tremendous level of flexibility over either thin or zero clients. And, unlike thin or zero clients, Cloud devices can be used for other purposes when not actually accessing the Cloud. A thin client can only access a central server, making it a single-purpose device.

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Big Data Making the Move

Slimming down clients is not a passing fad. In fact, many Big Data companies are already making the transition to IaaS in a very real and permanent way, laying the groundwork for other companies to follow in their footsteps.

Amazon basically invented the IaaS market with Amazon Web Services (AWS). Fast, affordable and easy to use, AWS offers on-demand IT resources on a pay-as-you-go pricing model without any initial investment. This incredible flexibility, combined with high speeds and low ongoing costs, makes AWS and similar Cloud solutions the storm of the future. Not to mention, as demand for Cloud services increase, the costs will commensurately decrease.



Google was essentially born in the Cloud, and is the single largest driving factor toward global Cloud use. With massive Cloud (data) centers throughout the country, Google is accessible and reliable for businesses everywhere. "Compute Engine" is Google's own IaaS.

While these industry giants are already associated with IaaS, many well-known product-based companies are moving toward becoming service-based companies based on IaaS. Hewlett-Packard now

offers Converged Cloud Solutions, which addresses the different needs of private, managed, public and hybrid Cloud solutions. IBM has OpenStack, an open source Cloud solution that lets users compose their own Cloud interface. And Microsoft is running Azure, one of the only Cloud options that's impressive enough to compete with Amazon and Google.

Even when hardware giants such as these are migrating toward Cloud services, it's clear that Cloud-based clients are gaining traction. In fact, companies like Salesforce, Citrix, and Rackspace proudly advertise that they don't offer either hardware or software, and instead focus on providing only Cloud solutions.

IaaS: Benefits and Barriers

There are a number of benefits to shifting into an IaaS business model. The scalability factor is a huge draw; it's far easier to flux up or scale down according to an organization's computing needs compared to traditional data centers, without the significant initial investment that used to be a mandatory part of upgrading.

Fewer hardware upgrades equals more reliable performance as well, and not as many concerns over constantly being on the edge of irrelevance at every new essential hardware upgrade. After the initial transition to IaaS is made, the maintenance is far less expensive going forward.



The benefits of IaaS are undeniable, so what are the barriers that have limited its immediate adoption? The incorrect perception over Cloud-based computing being less secure than traditional data centers persists as one of the primary obstacles to a more widespread adoption of IaaS. And, for companies who have invested significantly in their own IT departments, data centers and faithful hardware upgrades, there's some understandable reluctance about committing to a new approach.

Yet, at a certain point, the benefits of adopting IaaS outweigh the initial cost of transition. The bottom line is that these companies are investing in the future; no one is going back to traditional hardware anytime soon.

Industry Impact: Moving Forward

Each business has its own industry-specific preconceptions to overcome when it comes to the concept of thin and zero clients and IaaS, and electronic discovery is no exception. The privacy concerns over data stored in the Cloud rather than on a physical hard drive have many litigation support companies and information governance pundits concerned.

Yet, the same companies that are distrustful of using, posting or storing company and/or personal data in the Cloud, are comprised of individuals who typically practice online banking and shopping; soon, the parallels will become obvious even to the naysayers, and the security and viability of the Cloud will no longer be held in question.

It is however, more challenging to find relevant data in a larger pool, which is another primary concern for those in the eDiscovery and Information Governance industry. Combing through the Cloud is much different compared to examining a physical hard drive. And yet, this is a challenge that our industry simply must rise to meet, because there are definite benefits to IaaS as well, such as keeping data more centrally accessible for easier and arguably less costly discovery.

In the end, the concept of IT services as we know them, are changing... like it or not. More companies are moving away from traditional data centers and toward thin and zero and Cloud services. Rather than continuing to practice the old ways of doing things, it's time we all look at the benefits of taking a proactive approach toward the computing evolution that's now taking place.

Adapting these technologies now means no more playing leapfrog with your IT budget, constantly scrambling from one upgrade to the next in an effort to keep up with technological advances in hardware and software. By migrating into the Cloud instead, upgrades are handled by your provider, along with far greater flexibility when it comes to scaling your operations for changes in volume.

Perhaps most importantly though, is that by taking a forward-facing position when looking at the potential for IaaS and Cloud services, your company will be better positioned for the next big change instead of getting left behind.

If you would like to learn more about how TERIS can help you with information governance, please contact [Julia Romero Peter](#) [at TERIS Silicon Valley.](#)

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About the Author



Peter vR Sternkopf, TERIS Chief Technology Officer (CTO), has more than 22 years of experience in business vision and strategy, business development, marketing, analysis, people development, project management, and delivering business value through innovation and technologies.

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Prior to joining TERIS, Sternkopf was a senior consultant with MA&A Group, handling technical, financial, and project management engagements for clients such as SunTrust Bank, YouDecide.com, Workstream, and several East Coast healthcare providers. He also served in several positions with IKON Office Solutions, including regional director of electronic solutions and applications development manager.

Sternkopf received a Bachelor degree in Flight Technology from Central Washington University and a United States Air Force Officer commission as a pilot in the EuroNATO flight program. He is a Commercial/ Instrument/multi-engine pilot.

Some of his certifications include: Project Management Professional (PMP); Certified Microsoft Exchange Server & Outlook Client; American Management Association (AMA) – Information Systems Project Management; AMA- The Art of Discipline of Managing Software Projects; Mooney Player & Associates- Leadership in Action; Steven Covey- Seven Habits of Highly Effective People; Center for Management and Organizational Effectiveness; Concordance Certified Software Trainer; and Concordance Certified FYI Administrator.