

Re-envisioning I.T. in a World of Cloud and Security

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Re-envisioning I.T. in a
World of Cloud and Security
Mini-Book Strategy Series – Book 11

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DEDICATION

I dedicate this book to all those in the tech industry that have committed countless hours in the support of an ever-changing tech and business environment, keeping enterprises running 24x7!

PHOTO CREDIT

The photos in this book were taken by my wife or by me over the past few months, day to day pictures around our neighborhood during the quarantine lockdown world we've been living in.

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INTRODUCTION

When I wrote the first book of this mini-book series titled “New World of I.T.” back in 2014, I postulated that this “cloud computing thing” was going to completely upend and change the I.T. industry, and we were going to see radical changes on how I.T. would be run and managed within a decade.

Here we are, 7-years later, and “cloud” is no longer a buzzword, but part of the day-to-day I.T. operations of every organization. Some may argue that a 50/50 “hybrid” cloud and on-premises environment is likely more the target destination, but I’m going to once again go out on a limb and state that hybrid might be the end destination for “some” organizations, however the majority of organizations should be targeting to have 95+% of their business technology functions running in a public cloud environment within the next 7-years. That’s not a “hybrid” model, that’s a predominant cloud model with a handful of one-off exceptions which is very different in terms of managing, administering, and focusing on a 50/50 hybrid strategy.

Over the past year with the SolarWinds cyberattack, all of the various ransomware attacks, and the accelerated threats caused by zero-day vulnerabilities, every internal I.T. organization faces the challenge of keeping up with the velocity, complexity, and tenacity of cybercriminals. The best run public cloud providers of the world have more resources and economies of scale to handle the cyberthreats prevalent these days.

Many small nimble enterprises (under 500 employees) have already shifted to 100% in the public cloud by leveraging Microsoft Office 365 for email, files, collaboration, telephony, Web and video conferencing, security, compliance management, and even leveraging Microsoft Azure as the hosted platform for Windows, Linux, and container-based applications. These organizations no longer have “datacenters” with racks of servers to power, cool, maintain, and manage as they did before, providing their organization the flexibility to downsize their physical facilities (office) space or even move the organization without the complexity of transporting the datacenter and systems to a new facility.

A growing percentage of mid-sized enterprises (500-5000 employees) already have 50% or more of their business applications and resources running in a public cloud environment, typically things like email, web and video conferencing, file sharing, content collaboration, client relationship management tools, and the like. Large enterprises (5000+ employees) have also offloaded their web and video conferencing and email systems to the cloud, eliminating many servers, support servers, security components, and management tools needed to manage those systems on-prem like they used to.

With this dramatic shift in landscape and architecture, organizations have found a need to completely rethink and redo “how” they operate and manage I.T., being that the ENTIRE I.T. operations that was built over the past 2-3 decades of buying, building, implementing, and supporting on-premises infrastructure has very little applicability in this new world of cloud computing.

This book covers this new optimized I.T. model brought on by an efficient and effective public-cloud focused I.T. and security environment.



1 WHY DOES I.T. NEED TO BE RE-ENVISIONED?

Much has gone on over the past year and a half, with the lockdown caused by the Covid-19 global pandemic, while at the same time having an unprecedented volume of cyberthreats and cyberattacks targeting enterprises, institutions, and government agencies. The world as we knew it just a couple years ago is drastically different today, and the role that Information Technology (I.T.) departments and I.T. personnel served is no longer applicable today.

Cloud Services are Core to All Organizations

For years, organizations bought, built, and maintained their own datacenters to run their email systems, file storage systems, accounting systems, line of business systems, and the like. Public cloud services emerged a decade ago, with some early adopters jumping onboard, but others being more cautious citing concerns about security, performance, and reliability.

However, over the past 2-3 years, the primary public cloud providers like Microsoft, Amazon, Salesforce, and the like have helped organizations overcome some of the earlier perceptions on public cloud. And with

Why Does I.T. Need to be Re-Envisioned?

shutdowns caused by the pandemic and a rapid shift to “everyone” doing web and video conferencing leveraging public cloud providers like Zoom and Teams, plus sharing documents over OneDrive, Box, and the like, organizations rapidly shifted to utilizing public cloud services whether they wanted to or not.

Work from Home Changed the Locality of Users and Focus of Security Threats

This rapid shift to a work from home model changed the core I.T. services model relied on for years. Users were no longer in a handful of business offices where user and computer system were localized for support. Instead, users ended up being in hundreds if not thousands of different (individual) locations. I.T. support processes for user support, device management, security management, and application access all changed when users were sent home to work.

Distributed security became a challenge, as organizations used to have a “firewall” strategy that put a wall around the datacenter and business offices, but the minute users were working from home, the organizations punched hundreds and thousands of holes into their firewalls to allow users access to their applications.

Distribution of users also meant the footprint for cyberattacks expanded to each and every home office that users were working from. ALL of the aspects of I.T. user and system management changed overnight. Any security built on concepts and technologies from 3+ years ago became obsolete.

Cyberthreats Exceed Internal Capabilities to Protect Enterprises

A number of the recent cyberattacks have been State sponsored attacks initiated by country governments with very deep pockets. For organizations to thwart those attacks, they require security teams that exceed any budget and internal capability of ANY business enterprise, regardless of the organizations size and scope.

For individual enterprises to protect themselves against these State sponsored threats, it’s like trying to fight off an encroaching government air, land, and naval force incursion with a handful of private bodyguards.

On-Prem I.T. Datacenter Model Diminished Role

As organizations punched holes into their datacenters for users to gain access to their applications, all of the reasoning about security and user access performance being better in on-premises datacenters versus the

cloud completely went away.

When the user was a fiber or high-speed network connection away from on-premise application servers, organizations would find that their access to internal systems was faster than going to the cloud. But now that users have to go through the public internet, to then get access to enterprise resources, those same users working from home can go through the public internet to access enterprise resources in a public cloud with similar performance and security as on-prem.

As organizations shifted their email, files, web conferencing, collaboration tools, and other applications to cloud services, the need for an on-premises datacenter has diminished.

Buy / Build / Support Replaced by Identify / Align / Supply

With a shift to “as a service” public cloud offerings, fewer systems (or no systems) need to be purchased, built, upgraded, and maintained in enterprise owned and operated private datacenters. The shift from buy / build / support was replaced by the new requirement of identify / align / supply.

Cloud services now require an organization to identify business needs for technology, whether that’s for office-based services like emails, files, and collaboration, or that the organization needs things like accounting, finance, project management, or client relationship tools that might also need to be identified as a cloud service.

Once the business needs have been identified, the appropriate cloud application has to be aligned with business needs, feature functionality, and user adoption. From there, the cloud service is purchased (supplied) and operated on an ongoing basis. No hardware has to be purchased, installed in racks, powered on, configured, secured, and tested.

The I.T. services surrounding this process is VERY different than those buying, building, and supporting technologies of the past. New business processes need to be created to support this new business model.

Changing Business Environment Suggests a Change to I.T. Processes

Business environments have changed. Public cloud services have proven their depth of security and reliability. Organizations using public cloud services during the pandemic running critical business processes every day of the week “in the cloud services” now requires organizations to rethink and update their day-to-day I.T. processes.



2 IS PUBLIC CLOUD SERVICES THE RIGHT DESTINATION FOR TRADITIONAL I.T. SERVICES?

When organizations operated for decades with their own on-premise datacenters, navigating technology upgrades, market recessions, and fast paced technology innovations, it seemed for a while that the status quo of retaining the old ways of doing things was the better and safer way of running tech operations. However, as Covid-19 quarantines forced everyone around the globe to shelter at home, work remotely, and conduct day to day business over public cloud services like Zoom and Teams, all of the reasons to keep on-prem datacenters went out the door. Public cloud providers stepped up to the plate, innovated, scaled, secured, and optimized their offerings that completely changed the perception of public cloud, and has made public cloud THE target destination for traditional I.T. services.

Cloud as a Mainstream Provider

Everyone has now used some public cloud service, whether that's Zoom or Teams or some social media service. Prior to the Covid pandemic, it was easy for users and organizations to "hold off on the cloud" because users

hadn't familiarized themselves with cloud services, or organizations hadn't tested the security or created policies for cloud services.

A year+ into working from home, going to school from home, communicating with doctors or healthcare providers, or talking with family members, these days every system has some cloud app installed it to facilitate some type of public cloud hosted communications.

At a point where there was concern about cloud security and privacy, again, as everyone has used it to communicate with critical health providers, share business and personal information, or conduct some form of communications via a cloud service, there's a comfort level gained from simply using cloud for daily or routine services.

Cloud Solidifies Performance and Reliability

There was also a time when the reason for not using the public cloud was because it wasn't as reliable or as fast as what an organization might provide to its users working in an office. However, again, as everyone used public cloud services for daily communications during the work from home routine of the Covid-19 pandemic, the cloud providers got better at providing a 24x7 reliable service and they optimized the service to meet the performance needs of users no matter what type of internet connection the users might have.

Much of the challenges we faced in performance in the past was the expectation that every connection between user and system was a super high speed wired or fiber connection. But as organizations shifted applications to the cloud, applications have been updated to be more resilient and higher performing over a basic Internet connection.

If the Cloud is Down – Everyone is Down

Another interesting change in expectations by users is that when the cloud is down, everyone is down, so there's less of a requirement that 99.99% uptime is absolutely needed for each and every application.

During hurricane or cyclone season, in the midst of ravaging wildfires, in the middle of a blizzard, entire regions have been brought down because of power outages, forced evacuations, or infrastructure system failures. The uptime of an accounting system to send invoices during the middle of a regional emergency was not the priority for organizations.

Cloud As a Solution for Regional Emergencies

While just a decade ago, organizations would have kept critical communication systems like email in-house so that they can manage their user-to-user communications, in recent regional events (hurricanes, power outages, firestorms), organizations have found retaining systems in their

Is Public Cloud Services the Right Destination for Traditional I.T. Services?

own control was a direct threat to communications.

As organizations relegated email to a cloud provider like Microsoft's Office 365, because of the redundancy provided by the service in various regions, while a private datacenter may be overwhelmed by utility or system failures, the cloud providers have interconnected systems that span broader working areas, providing continuous communications even during multiple regional events.

Keeping Ahead of Cyberthreats Nears Impossibility

As shared in Chapter 1, cyberthreats, especially State sponsored cyberthreats backed by virtually limitless funding and resources, makes securing a private datacenter nearly impossible. When a major public cloud provider spends billions of dollars a year on security, that extent of investment and sophistication is just not possible for private organizations.

Cloud is More Economical Than Real Estate

For organizations choosing to operate their own datacenters, one of the challenges is the location of where the organization establishes their site of operations. For large enterprises in major metropolitans, that means datacenters are frequently setup in expensive real estate markets like San Francisco, New York, Chicago, Los Angeles, Silicon Valley, Boston, Atlanta, or the like.

Of course, the organization can move their private datacenter operations to a lower real estate cost area, however the shear cost of moving a datacenter and then the ongoing cost of running a remote private datacenter has to be questioned.

If users are now going to be 100's or 1000's of miles from their datacenter, likely reaching to it over an Internet connection from home, what makes this any different than users reaching to a public cloud provider, 100's or 1000's of miles away over the same Internet connection?

Cloud Provides Business Continuity

For large enterprises with multiple offices in various regions across a country or around the world, the ability to setup failover systems between sites allowed for internal private datacenter failover for business continuity. However, for smaller organizations, having a secondary site with failover capabilities in-house does not provide a simple disaster recovery infrastructure. Cloud services have provided organizations geo-failover without the cost of setting up and hosting their own distributed datacenters.

As organizations look to protect themselves from regional disasters, power outages, or minimize the cost of doing site replication themselves,

public cloud services have a distinct advantage as a working solution.

Optimizing the Global Flow of Information

One of the key functions cloud computing provides these days is a centralized method of communicating with anyone from anywhere. Prior to the proliferation of the Internet, if someone wanted to communicate with someone else, they might write and mail a letter or make a phone call. With the Internet, users can simply connect via a Web or video call.

Internet-based communications like Zoom, Teams, or the like only require a connection to the Internet, there's no transaction cost or "per minute" cost for the communications.

As users can communicate to anyone from anywhere, a logical extension has been to expand beyond just communications to include file and content sharing, or conduct full transactional collaborate with anyone in the world.

Shifting to Cloud Enables I.T. to Focus on True Business Tech Solutions

As users connect to the cloud and conduct their day-to-day business leveraging public cloud services, it offloads the need for traditional I.T. departments and personnel from having to build, manage, and support in-house on-premise systems that used to do the same thing (i.e.: email servers, file servers, PBX phone systems, SharePoint collaboration systems, etc.).

I.T. can now focus on the use of technology for things that can help the organization simplify daily tasks, and use technology as a business enabler.



3 WHAT ABOUT A HYBRID CLOUD STRATEGY?

Prior to global changes caused by Covid-19 lockdowns, some organizations were moving bit by bit to the public cloud, while other organizations dipped their toe into the cloud and declared a “hybrid-cloud” strategy was going to be in their long-term future. However, all the justifications for staying on-prem (better security, better reliability) have gone away with drastic improvements made by the public cloud providers, leaving organizations needing to move either 100% to the cloud, or at most 90-95% in the cloud, where on-prem is now an exception case, not a long term I.T. strategy.

Hybrid as a Transition State, Not an End Goal

Instead of hybrid cloud being a destination, where organizations have a significant portion of their business computing systems both on-premise and in the cloud, the concept of hybrid cloud is actually just a transitional state.

Clearly Defining What Hybrid Means

Hybrid cloud has the connotation that it's 50/50 on-prem/cloud, even 60/40 or 70/30. However, the end state of an organization's business computer systems should be 95+% run and hosted as public cloud services. Some might argue their manufacturing processes are unique, their retail offerings are custom, or their financial systems are very specific to their business so that they must run those on dedicated systems in their own datacenters. But it's like saying the data in my Excel spreadsheet or the format of my emails is unique, therefore I need to go back to hosting my own email and file systems again.

No, the core business computing services can be publicly hosted, even utilizing shared services like email, file, and conferencing systems, where each organization can make variations to the cloud system that is specific to their organization's needs.

Legacy Systems Are Not a Strategy

Organizations many times say their business runs on an IBM Mainframe or custom in-house systems that prevents them from shifting to the cloud, because they cannot move the mainframe or legacy system to the public cloud as a hosted system or service. But herein lies the problem, that legacy by definition is old, and organizations with a long term technology strategy need to have a plan what to do with their 20- or 30-year-old custom systems, and look to transform their technology to leverage more modern and supportable technology solutions. So yes, you can't migrate those older systems "now", but transition everything else that can be migrated, and within a few years finally cutover the last of the systems to a modern long term platform.

It's like saying our systems will only run on old black and white CRT monitors, that it doesn't support newer HDMI flat panel displays. While that might be true, constantly trying to support a technology that hasn't been built in years or decades makes the solution expensive to operate, and the technology itself becomes a business risk as the old, frail, obsolete system can catastrophically fail crippling the organization from conducting business.

Organizations need to strategize a change to a standardized model to relieve the organization of the boat anchor that locks the organization down. Yes, it might be complicated to unhook a 20- or 30-year-old system, but remember Y2K when organizations were out searching for retired Cobol programmers to fix archaic systems that were still in use? Technology and security threats are moving quickly, organizations need to put a long term strategy in to adapt!

Creating a Strategy, Not an Excuse

When it comes to modernizing technologies, organizations need to evolve beyond saying “we can’t do that”, and shift to “we can do that, this is what it’ll take.” Of course, it might take time, effort, and costs to modernize, however updating systems, making them more supported of a modern public cloud can not only reduce business risk, but newer technologies more easily tap in to technological advancements of the past handful of years like real time data analytics, low code and no code programming, automation, and self-service user access.

Existing 3-5 Year Plans are Out the Door

Any existing I.T. strategy plans, architectures, and I.T. models that pre-date global changes caused by the shutdown of Covid-19 are obsolete, period. No organization should be doing things the same with the plans they laid out pre-Covid. It’s a new world, many people are and will continue to work from home. People’s hesitation to connect to the public cloud is behind us now that users have connected to the cloud to work, go to school, go shopping, and conduct other day to day tasks.

Even if some things return to in-person functions, a restaurant that survived on “to-go” food orders really has to think whether it wants to eliminate to-go and revert 100% back to in-person dining. Or an organization that sells goods and services has to consider whether it wants to go back to a solely “in-person” shopping option, or whether it will provide BOTH in-person and online options. Businesspeople that used to travel all the time, that then didn’t travel at all for over a year, have to rethink whether they will go back to traveling full time again or have some type of mix between traveling and communicating online.

It’s a very different world, with different business needs and requirements. Plans need to change to adapt to newer standards, methods, expectations, and processes that are appropriate for the dynamic world ahead of us, not the one we used to have before.



4 HOW TO COMPLETE YOUR TRANSITION TO THE CLOUD

For organizations that have already completed or are nearly complete in their strategy to the public cloud, they can bypass this chapter. For those that are not yet complete with their transition, this chapter focuses on getting over the hump, and finalizing the path to complete I.T. modernization.

Optimizing I.T. as a Public Cloud Services Model

By eliminating the phrase “we can’t do that” as noted in the previous chapter, I.T. here forward optimizes its use of the public cloud. Organizations adopt a “cloud first” model where all future uses of technology are driven to cloud-based solutions. Organizations set their strategy to eliminate legacy systems, eliminate on-premise systems, and set a path to modernizing all of their technology systems.

Preventing Vendor Lock-in

Many times, organizations cite their reasoning for not migrating to a

How to Complete Your Transition to the Cloud

public cloud service is to avoid locking themselves into a particular vendor. That once they migrate to the cloud, it'll be costly to switch to another vendor if they need to.

That might be true, that an organization that shifts their email to Microsoft's Office 365 cloud email, or an organization that ports their business application to run on Amazon Web Service's cloud data systems have locked themselves into those vendors.

However, how's that any different than I.T. decisions made on-prem over the past several decades. The organization that bought and implemented Oracle Financials couldn't easily switch off to something else. Or the organization that built their entire network infrastructure on Cisco networking equipment, or their virtual machine environment on VMware, or just spent 2-yrs implementing SAP can't just switch to something else.

So, the "vendor lock-in" has existed for a very long time. The big difference this go around is the threat looming over organizations with old and archaic systems and the risk they have in terms of gross technology obsolescence, vendor support for an out-of-support solution, and the potential for cyberattacks against an old and unsupported platform makes this transition one of necessity.

Older systems prevent organizations from leveraging the latest technologies available to them like data analytics, integration with Internet of Thing (IoT) solutions, use of artificial intelligence solutions, or the like.

Many of the "we can't do that" statements are more applicable to the older systems because those old systems do not cross-integrate with newer technologies available, so the vendor lock-in is more applicable to the older systems, not from the use of modern solutions available.

Envisioning the Organization's End End Goal

As stated, the organization's tech strategy isn't about the "next thing" or even the "next five things" the organization will do. It's about reaching the end state, determining the final state of the organization's tech platform once everything is updated and modernized. It's about envisioning a platform where I.T. has ultimate flexibility in integrating with other modern technologies and systems. It's about getting I.T. out of the I.T. business by leveraging as much commodity services as possible. It's about I.T. now being able to focus its time on leveraging technology to be a business enabler, making "tech" be the differentiator for the strategic advantage for the organization in the future.

Focusing Tech Transition as a One-time Process

Tech modernization has been about the one-time transition to a modern state, and then simply performing ongoing rolling updates thereafter. No longer does the organization need to install and upgrade new systems every 3-5 years.

Because the transition out of legacy or on-premise systems to the latest cloud solution is a one-time process, it has made more sense for organizations to simply hire migration specialists to come in, migrate the organization, and get the transition completed. This contract, instead of in-house migration model, is faster and can result in more successful completed tasks when those doing the work have done similar transitions dozens, if not hundreds of times in the past.

There's no value for an in-house I.T. team to learn and gain experience doing a one-time process. Hire resources to come in, do it right, get it done quickly, and move on to the next solution to update and modernize the environment and get to the final target platform sooner.

Looking Forward, Not Looking Back

It's challenging for organizations trying to move forward when those who built the past environments reminisce the time and effort that went in to building the old system. All the unique things they did to make it the old system what it is today. All the reasoning for configuring unique settings, building unique processes, making the existing system operate the way it does for the organization.

While that institutional knowledge might be helpful in transitioning to the new system, many times the reasoning for doing something the way it WAS done before isn't applicable anymore. Bringing forward years of old processes, procedures, systems, and customizations just may not be relevant to the organization or needed in the current modern state of technology.

When analyzing existing systems, business analysts find users generating and producing reports that no one ever reads. I.T. teams spend many hours "backing up" systems because old systems used to crash frequently, so the solution was to make multiple backups to prevent data loss. But newer systems can frequently "snapshot" the full system, effectively creating a real time backup of an entire system for immediate restoral. So instead of falling back to old processes, it's helpful to think about what processes are done, whether the processes are of value today (and in the future), and eliminate processes no longer applicable to current business operations and technology systems.



5 DEVELOPING NEW I.T. PROCESSES AND PROCEDURES

There's no question that once an organization has fully transitioned or at least 50% transitioned to the public cloud, that their internal I.T. processes and procedures **HAVE** to be updated! Half or more than half the resources being moved out of the traditional datacenter should lead the organization to begin the process of physically eliminating racks, datacenter support systems, and even entire datacenters themselves.

The people and processes that operated the traditional datacenters should no longer be consumed with the same level, scope, and tasks than when the organization had twice as many resources in the datacenter. The quicker the organization can switchover away from a mixed 50/50 environment, the quicker it can streamline processes, procedures, and personnel in the new model.

The mixed hybrid model is not efficient, can effectively double the amount of work an organization has to do to support parallel processes and environments, and thus as new I.T. policies and procedures are created, the organization should rapidly complete its transition to modernization.

New I.T. Model Means New I.T. Processes

Because organizations that have shifted to public cloud solutions and services no longer buy, build, patch, update, or upgrade systems, all of the policies and procedures focused on the old model have to be revised and updated. And it's not taking old documentations and simply making minor updates and changes to them, but cloud systems have a completely different method for onboarding users, configuring settings, and managing and maintaining the systems that a whole model for ongoing support needs to be written from scratch.

Are Old Procedures Even Applicable These Days?

One of the most common (legacy) processes no longer applicable these days in the era of public cloud services is the idea of 'backing up the email system'. With a cloud provider, that's just NOT needed these days. We backed up our old email systems because our old on-premise servers used to crash frequently, databases got corrupt and had to be repaired, we had to have backups because we were constantly repairing, recovering, or even restoring from a backup of the system.

Most I.T. personnel probably don't remember the last time their on-premise email system crashed to have to be recovered from a backup. But organizations have used backups for legal eDiscovery search, but if actually queried, legal teams would likely admit that content had to be searched because the backups existed. If the backups did not exist, the search would not be required.

Rarely are eDiscovery searches more beneficial to the organization than the cost of doing the search, review, redaction, and outcome. Therefore, the ONLY reason an organization backs up their cloud email system is for regulatory content retention purposes, which modern cloud email systems have built-in retention policy capabilities, eDiscovery and search functionality, that does NOT require 3rd party backups to fulfill compliance requirements. Backups on most systems are an archaic concept, continuing to do so is reflecting on the past, not on the true current business needs and best practices.

Relying on Service Level Agreements, Not Self Support

I.T. does not need to "fix things" in an as a service model, that's the responsibility of the cloud service provider. Organizations have to remember that when they buy into a cloud-based service, they are buying a service level agreement (SLA) on uptime from that provider. The SLA is frequently 99% or 99.5% which means the service can be down 2-4 hours a month.

That 2-4 hours a month sounds like a lot when most business executives

fear those 2-4 hours happening in the middle of the busiest and most critical time during the day. However an SLA is a contracted limit. If a cloud vendor is “down” in the middle of critical work hours, or are down on a frequent basis, the cloud provider will struggle keeping customers. Large public cloud providers know this, and operate their service with significantly better uptime reliability performance.

In today’s cybersecurity laden world where organizations have to constantly upgrade and update systems to keep their applications current, and thwart security threats to protect their customers, the time and effort conducted by the cloud vendor, all within the contracted SLA is still better than what most I.T. organizations will be able to do in the current threat-laden operating environment.

I.T. Operations Focusing on Core I.T. Responsibilities

By offloading basic day to day I.T. tasks to cloud providers, in-house I.T. personnel can now focus on tasks and services that directly benefit their organization. I.T. can identify what users in the organization need to do to do their jobs, and come up with solutions on how technology can fulfill on the needs of its user community.

I.T. can also spend its time reviewing security and operations in the organization, stepping back and holistically looking at operational efficiencies, security operations, and daily tasks than merely having their head stuck in systems all day long replacing parts, pieces, and monitoring blinking lights.

I.T. can spend its time providing user adoption and support to the user community, and envisioning tech’s role in helping the organization be a first mover in their respective industry by leveraging technologies. These are all forward focused services that I.T. can do to help improve day to day operational tasks throughout the organization, than reactionary tasks that have been the work of I.T. in the past.

Focusing on the Results Not on the Configuration

In the past, I.T. proved something worked by writing out lengthy “as built” documentation how things were setup and configured, whereas in the cloud world the focus is on noting the business requirement and what service is enabled to achieve that end result. The new world of cloud solutions is focusing on the results that technology provides, not on the nuances of software installations, configurations, and underlying settings.

This is the big change in technology modernization, one where technology is an active contribution to the forward moving success of the organization, not merely just “infrastructure” like plumbing, lighting, and electricity is in the contribution to an organization’s success.



6 LEVERAGING FRACTIONAL I.T. STRATEGY, OVERSIGHT, AND IMPLEMENTATION ROLES

There are many I.T. roles that change as the organization shifts to an “as a service” model that embeds rolling updates and cloud vendor provided support services. Full time strategy planning, oversight, and implementation roles shift to fractional advisory roles by professionals that are working with many organizations in a similar industry, thus sharing current industry best practices as needed to the management of the organization.

As a Service Technologies; As a Service Management

Just as many organizations don’t employ in-house lawyers and CPAs as laws and strategies change frequently, as technology shifts to an ‘as a service’ operational model, organizations don’t necessarily need full time in-house I.T. professionals to the extent as they’ve had in the past.

Organizations do have in-house legal and finance personnel on staff that leverage outside counsel and professional support on the latest best practices in law and accounting practices, so there’s a valuable ongoing role for in-house I.T. Internal I.T.’s role changes though, rather than being the hands-on “do’ers” of technology, they maintain business operations and seek outside technology and security experts that work closely with other

Leveraging Fractional I.T. Strategy, Oversight, and Implementation Roles

organizations in the industry with focused knowledge and expertise in the work performed in the organization.

Outside experts can assist with ongoing strategy to thwart security attacks, optimize data analytics resources, and assist in applying current best practices in industry specific use of automation and communications applicable to the organization and its industry.

Sporadic Upgrades in the Cloud

Where technologies a decade or two ago required major upgrades every 3-5 years, rolling upgrades and updates do not have radical changes that require as much time for in-house I.T. personnel to do the planning, preparation, and upgrades as done in the past.

When revisions need to be made, it is more helpful for in-house I.T. to bring in experienced personnel that have done the exact same upgrade and update a dozen times before to quickly walk through best practice processes than to internally train and have in-house I.T. do the task themselves. It's just a change in processes, where doing the work takes less time than teaching someone to do the work.

The Need for Change Management and User Adoption

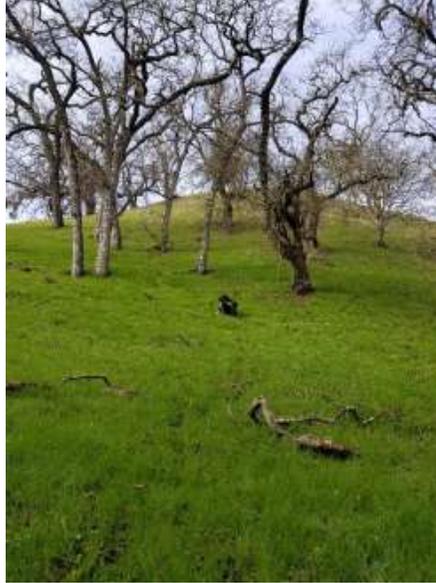
As technologies self-update on a rolling basis, organizations find more of a need to provide change management and user adoption assistance to their users on “how the new thing works” or “how to take advantage of the new features/functions that just rolled out.” THIS is a crucial role for in-house I.T. to train up to do.

User productivity has always been important for organizations, and this role can greatly benefit the organization to have in-house experts to help users best leverage the technologies and solutions in front of them.

The Shift to Self-Help and Peer Collaboration

Users these days require less handholding than they did a decade ago. Users are used to having their phone apps update every few months and have learned to adapt to changes in look, feel, and function of their mobile apps. Instead of formal step by step training, users these days are looking for self-help tips and hints, or to be able to look up self-help or support using social media type of chat, collaboration, and communications.

Users look to other peers for assistance on things they're doing and getting peer to peer support than having someone come in and formally “train them” or provide them “traditional helpdesk support.” As user communities expect and require different methods and processes for their support, I.T. teams need to shift the way they fulfill on user needs in a different manner.



7 RE-ENVISIONING I.T. STAFFING IN A MODERN CLOUD-FIRST I.T. MODEL

With a smaller I.T. datacenter footprint, and more apps that are hosted or cloud-managed, a reassessment of I.T. in general and the role of I.T. personnel is likely prudent at this time.

Assessing Personnel Roles in the New I.T. Environment

As the world of I.T. changes from a solely build model to a model where most (or all) I.T. services are purchased as services, the skillsets of the personnel that make up the I.T. operations also needs to change. For some organizations, management may find individuals can be retrained to fit new roles, whereas other organizations may need to recruit a new line of personnel. It is important for I.T. individuals to keep relevant in their skills beyond technology to contribute to the I.T. model of the future.

I.T. Architects Give Way to Business Analysts

The role of the I.T. architect changes from a technologist designing servers, system fault tolerance, and software migrations to business analysts who understand the business and the role of employees within the

organization. The I.T. architect may still be the same individual fulfilling the role, but the focus is to truly understand the organization, how the business runs, what the business goals and objectives are, and then “designing” the use of technology within the business to fulfill the needs of the employees in the organization.

Instead of taking current demand and capacity and creating models on the size, redundancy, and scalability of systems, it’s identifying the applications users need to run and determine what model best fulfills on meeting the needs of the users. The analyst needs to determine whether an application will be hosted by the organization internally, or whether the application can be purchased on a subscription basis from a hosted cloud provider. If a hosted cloud provider doesn’t provide the specific application to be run in the cloud, consider a model where the underlying infrastructure (i.e.: virtual machine and OS) is hosted by a cloud provider, and the I.T. organization simply installs and supports the running of the application in the cloud.

The business analyst would also spend a good portion of their time crunching numbers to determine the most effective cost model for the organization. Whether it’s paying a flat monthly fee, or whether an “on demand” model leveraging cloud services is appropriate for the organization. As noted in the previous chapter, the costing model is not necessarily a linear monthly cost for cloud hosted applications. Many hosted services can be acquired on a usage basis so that an organization can build capacity to meet peak needs, but shutdown services in the cloud when the capacity is not needed, and thus optimize costs by 40%-60%.

The role of the business analyst in architecting and designing the right I.T. environment is to make sure to “buy” the right capacity to fulfill on the needs of the organization. In this role, it’s important to think “outside the box” and not simply take the same application and same business model used today, and just cost the exact same model in the cloud. The cloud is just another input in the cost matrix to use in calculations. The business analyst needs to understand what users in the organization need to do, and then recommend the right application/tool, in the right business model, with the right costing structure to fulfill on the obligation of providing services at the most effective cost and structure.

Technology Upgrade Specialists Give Way to Change Fulfillment Specialists

In the past, I.T. has been focused on upgrading technologies from one version to another. Backend servers were upgraded, and I.T. specialists focused on the upgrade of the server systems. When client applications were upgraded, I.T. specialists focused on deploying applications on user

systems. However, in an I.T. environment where applications are provided to users from a centralized hosted environment, there are no backend servers for the organization to upgrade, and frequently no applications to install on end user systems either. The role of I.T. in this transition is to assist in any change fulfillment that needs to be addressed such as user training or integration modifications.

However hosted cloud providers have historically upgraded their systems in real-time, adding in new features and functions, and consumers of the services have had little need for incremental training. The new functionality just appears and is available to the users, and even in major version updates, users have for the most part just “figured out” how the new system works. This goes back to the more tech savvy workforce where users are familiar enough with technologies that they can figure out how to navigate their way around an updated application.

It’s the reason the term Change Management is used in the description of this new I.T. role as I.T. won’t really have much control to “manage” the change that is happening. Instead, I.T. will just have to fulfill their role in supporting users and the environment when the change occurs.

The individuals fulfilling this role will need less hands-on software imaging and application packaging experience, and be better communicators and support personnel who are able to work through any changes that directly impact business operations. The role focuses on addressing the change and reactively solving any problems, not necessarily handholding users through new features and functions.

Network Administrators Give Way to Supply and Demand Managers

Within I.T. operations, there are a number of different network administrators that oversee various technical functions in the organization. Some administrators oversee databases, others email systems, some provision and deprovision employees, some address security, while others focus on the network infrastructure and storage systems. Some of these roles will remain the same for an organization, at least for a short while, whereas other roles will quickly be replaced.

As an example, if an organization migrates its email system to a hosted cloud environment, there is no need for a role of someone to patch, manage, and update email servers thereafter. In a full cutover of an email system to a hosted cloud environment, there are no remaining on premise email systems to backup, maintain, and manage.

There is however, still a role to administrator email accounts, create email routing policies, address email security rules, and provide end-user support for access to the email system. The role shifts from managing

“systems” to effectively administering settings and ensuring that supply and operations meet the needs and demands of the organization.

If an organization moves document storage to the cloud, then the need to manage file systems, storage area network systems, backing up files, and other day to day tasks are eliminated from the organization. However, the organization still has to focus on document management, document change control, security access to content, and things as they relate to user access, modification, and the security of the content.

Some roles are combined as things like email settings or cloud monitoring are sporadic tasks and not particularly full time tasks, so an individual may be responsible for addressing settings for emails, files, stored content, hosted Web servers, and the like. The I.T. role shifts from a specialist in 1 technology platform to someone who needs to be savvy with the administration and management of multiple applications along with the settings and operations of multiple systems.

There’s no doubt that as services are shifted to cloud-based environments and even if organizations choose to host applications in-house, that the focus is far less about patching and managing “systems” as once was the responsibility of I.T. specialists. The shift in focus will be about sizing demand, optimizing settings, and ensuring consistent access to the hosted or the on-premise system services.

Help Desk Gives Way to End User Enablement Specialists

A big change organizations will start to see is a shift from traditional “help desk” roles to one of I.T. individuals assisting users to maximize their use of the technologies available to them. As the workplace fills itself with more tech savvy individuals, and organizations broaden their support for various endpoint devices, the organization will find that its need to provide helpdesk support in the traditional sense will change.

The helpdesk individuals will spend less time assisting users to click to open files, or press send to send messages, but rather proactively work with business departments in helping users best leverage the technologies available to them. A frontline support person can greatly contribute to the success of the organization by helping marketing personnel access marketing data and leverage that information to conduct better marketplace assessments. Or sales personnel can be assisted on the frontline to better leverage client support tools, track sales opportunities, increase revenues by better understanding and supporting the end client.

Helpdesk can be shifted from being a reactive support resource helping technically novice individuals with mundane support tasks, to being a group of proactive enablement specialists helping employees be more productive in their day-to-day operations.

Changing Roles Requires New Skills

As with any operational change, the I.T. organization will have different roles in I.T. The skills required in the new world of I.T. is far more business focused and user interaction focused than hands-on technical focused. The make-up of the I.T. department will have fewer individuals running around building, patching, and maintaining systems than in the past, and more individuals doing business assessments, financial and operational optimization assessments, and more face time communications with users in the organization about what they do and what users in similar organizations do.

Shifting Recruiting to Good Communicators and Business Savvy Individuals

With this change from technologists to analysts, the recruiting process in I.T. will shift from those who are good building, configuring, and managing servers and systems, to those who have exceptional communications skills, have business acumen, and are good business analysts. I.T. organizations will find they will think more like economists, looking to optimize marginal costs as opposed to technologists looking to build highly redundant and high performing systems. But this is the shift as services hosted in the cloud and paid for by consumption are best optimized and controlled rather than merely allowing users to consume an unlimited amount of capacity at an incremental cost to an organization.

From a costing model where some Web Conferencing service providers charge “per hosted conference session,” other providers charge a flat monthly rate. Most organizations have just paid the “per conference rate” just like they have for years blindly paid for mobile phone charges. However when an organization is truly managing its costs of I.T., having a cost analyst track the cost of web conference calls versus the conversion to a flat fee service, the simple choice of selecting an appropriate vendor and their service plan can improve the bottom line for a business by \$20,000/yr and in examples we’ve seen upwards of \$500,000/yr.

The best run I.T. organizations are those that have tight controls over expenditures, not necessarily just cutting costs and pinching pennies, but truly analyzing usage and contracted rates. By looking for other competitive offerings from other providers and shutting down redundant servers at night and on weekends, an organization can better optimize their expenditures on I.T. services. This is no different than organizations shutting off lights at night and turning off air conditioning and heating systems during off hours as there’s no reason to keep an empty office brightly lit and perfectly temperature controlled when nobody is in the office.

The make-up of the I.T. department is one where these more business savvy individuals will keep an eye on business operations and help the organization be more effective end-to-end at what it does.

Supporting Existing Technologist Roles

As a final comment on the changing role of I.T. personnel, not all I.T. Professionals will be replaced by a college educated Economics majors and English Literature majors, there's still a HUGE need for technologists in the technology industry. But the writing is on the wall that in today's I.T. environment, instead of nearly 100% technologists, I.T. organization are already finding a need for a blend of 50% business focused resources and 50% technologists. Organizations are more in need of business analysts, business savvy communicators, and technology enablers compared to the hardcore hands-on technologists of the past. Still plenty of room for those with deep down valuable technical skills, however when half the jobs going to non-technology specific individual, it begs the need for either skill re-training or drastic shifts in the personnel that will make up the I.T. department in the near future.

It's these changes in the make-up of I.T. that have begun as organizations shift their I.T. services to hosted cloud environments. Additionally, as a more tech savvy workforce, requiring less handholding, become the norm in the business environment, the distribution of technical knowledge throughout an organization will change the focus of what I.T. will do day in and day out, I.T. has changed and will further change over the next 5-10 years, and as the changes will occur, organizations will adapt to the changing environment.



8 ALIGNING BUSINESS NEEDS WITH I.T. FULFILLMENT

As I.T. begins to better understand the overall strategy of the organization, as well as it starts to better understand how individuals within the organization function to do their jobs day in and day out, I.T. can then align its technology initiatives to better fulfill the needs of the business.

Mapping Technologies Directly to Business Needs

I.T. has focused the tools of the business to basic functions like email, word processing, general Web access and line of business applications. However those are just the basic tools that users need and the challenge has been that I.T. has been listening to their vendors and seeing what their vendor bundle within the licensing agreement rather than listening to the employees of the company to better understand what the users truly need to get their jobs done.

The proliferation of cloud-based tools has actually helped I.T. better understand the needs of its user base by seeing what tools and solutions

Aligning Business Needs with I.T. Fulfillment

(like DropBox, Salesforce, Google docs, OneDrive, etc.) departments are using. It's not that every department is using the exact same tool, but there are similarities between the tools in use. So while one department might be using Box.com to store files and another department in the organization is using DropBox and another department is using OneDrive, effectively the users across the enterprise are using some form of file storage and file sharing solution. And likely, after interviewing users and seeing what they use the cloud storage for, I.T. typically finds users are looking for a repository that they can access content from any of their devices (PCs, Macs, iPads, Android phones, etc.) and from anywhere (office, home, while traveling, etc.). Additionally, they can selectively share content with others outside of the organization. This basic universal file storage and sharing functionality has not been easy with traditional corporate enterprise tools. Traditional file systems were not accessible from outside the organization unless the user VPN'd into the network. Most corporate file systems did not provide the ability to share content with users outside of the organization and many corporate file sharing solutions might work great with a Windows-based PC, but had limited support for Macs, iPads, and mobile phones. So, by understanding what users are using and doing, the technology that I.T. needs to identify and embrace in its I.T. services has to fulfill on these types of requirements demanded by its user base.

Sorting Needs to the Importance in Business Success

Just like with any list of needs, the key is to sort the needs and prioritize them so that I.T. can focus on the most important business solutions first. Of course, the huge concern for I.T. organizations right now is the fact that there are a lot of these external cloud-based services where sensitive business documents are stored, without any security oversight, so the organization wants to move quickly to lock down content and protect information as quickly as possible. However rather than blocking access and preventing access to external information, the organization can sort business user needs into importance around business success, and then I.T. can get its arms around the technology solution needs in proper order.

Sorting Needs to the Fundamentals of Business Operations

The fundamentals of business operation are typically help the organization meet its business goals. In many organizations, it's the things that help increase revenues that contribute directly to business profitability. When properly implemented and supported, those tools can hopefully help contribute to the success of the organization. From a technology standpoint, it might be tools that help sales individuals better target customer needs, which might be a client relationship management tool, or

data analysis tools that crunches and processes data. Or it could be public awareness tools that help individuals within an organization better communicate with the organization's customers, that are of most benefit to the organization.

For many organizations, e-mail is a fundamental business tool, as users may use email to communicate with customers. Others may find transaction processing tools like ERP tools as mission critical for the business in terms of accepting and processing orders for shipment. Every organization has fundamental business needs that are supported by technology, and those tools that have the most impact on the success of the business are the ones that are typically prioritized for fulfillment in I.T.'s strategy implementation roadmap.

Reconciling Needs and Establishing I.T. Priorities

Reconciling needs may sound very similar to sorting fundamental business needs and priorities, but the focus here is I.T. priorities. There may be conflicting priorities that need to be addressed, and those may need to be rolled up to management to prioritize what is deemed most important to the organization. One example is an outward facing client solution that may drive sales up, however at the same time a security concern like customer and confidential legal information stored unprotected in external cloud storage services may need to be addressed promptly as well. Effectively one priority can improve business revenues, whereas another priority addresses data leakage due to lack of security controls.

In cases where there are conflicting business priorities, a business decision needs to be made to determine what the organization will prioritize. Many times, leveraging contract resources can allow an organization to do two or more things at the same time. Alternatively, the organization can do a risk assessment and while protecting confidential information is extremely important, if the data has been hosted externally at a cloud provider for the past 2 years, then what's another few more weeks to get around to tightening down the security on the external content. There are pros and cons, and establishing I.T. priorities can address the timing and fulfillment of execution on I.T. initiatives within the enterprise.

I.T.'s Success is Measured on Business Success

What we've seen over the past couple years is a shift in the measurement of whether I.T. is successful or not. In the past, I.T. measured its success typically by its attainment of some measurement of service level reliability of I.T. systems. If the organization's goal is 99.99% uptime, then the organization drives to that measurement and says it is successful because systems were always operational.

Aligning Business Needs with I.T. Fulfillment

However, the more recent measurements of I.T. success have been based on the success of the business. When I.T. can associate increases in profitability with the introduction of a key sales tool or data analysis tool that helped the organization be more effective selling, then I.T. can show measurable contribution to the success of the organization. Or I.T. can directly translate the lowering of costs in the organization, like the decrease in long distance phone call bills, or the reduction in travel costs through the introduction of Web Conferencing or Web-based telephony solutions. The Web-based solution can better support users to communicate over existing data connections rather than using phone line services that charge per minute.

When the organization has the opportunity to grow and expand and to do so without direct linear increases in costs, this becomes a win for the I.T. department, if its services were key to that measurement of success within the business.

Focusing on Business Results, not Operational Capacity

Lastly, another metric for measurement is the shift from measuring I.T.'s value in terms of meeting operational capacity - shifting to measuring I.T.'s ability to directly address business results. If employees of an organization can communicate effectively with their clients using fewer travel days going to go and meet clients in person: not only are there direct savings in travel costs, but the employee can be spending the time normally consumed by travel to be communicating with other clients and helping expand the business.

The shift to cloud-based services with elastic capacity eliminates the need for the I.T. department to track and manage operational capacity. Instead, I.T. can now focus its time and effort on adding additional services, providing better methods of communications, and directly focusing the efforts of the business to grow and expand its services to the community.



9 REFOCUSING I.T. AS A BUSINESS ENABLER

One of the factors in the shift to the new world of I.T. that goes beyond the evolution of technologies and the proliferation of cloud services focuses simply on a better digitally skilled workforce. All things tech related are no longer solely a realm for techies. Two decades ago, the average office worker had limited computer experience and had to be trained to use a piece of software, and systems were built and configured to simplify the learning experience. However, after sending everyone home, to work remotely, typically without someone in I.T. able to come over and help them with something, employees have gotten more tech savvy and self-sufficient in their use of technologies.

Additionally, new entrants to the workforce know nothing but a world filled with computers, search engines, and the Internet along with a senior workforce that has been using systems daily for the past decade or more, the need to “handhold” users on basic tech functions is a thing of the past, now is the time to start taking this tech skilled workforce to the next level.

I.T.'s Value in the Tech Enablement of the Business

As traditional I.T. “backend” services are now being handled “as a service” by cloud providers, an organization’s I.T. team can now focus on the technology needs of the organization’s employees in a more strategic manner. I.T. can now start helping the organization build, leverage, and integrate artificial intelligence, data analytics, robotics, self-help automation, and big data into day-to-day processes.

Instead of I.T. being a reactionary operational support arm of the organization, “tech” can be on the frontend of the organization, helping the organization sell more, buy more, manufacture more, know more, do more through the use of technologies.

Example – Augmented Reality

Augmented Reality has made its way into organizations, leveraging Internet of Things (IoT) cameras, artificial intelligence, and robotics onto factory floors, in science labs, at construction sites, and in retail showrooms. Augmented Reality has helped managers, supervisors, safety workers, customer service teams, and others that may have normally (physically) visited worksites every few weeks to now visit the locations virtually at anytime from anywhere.

Cameras as well as sensors allow employees to pop in and “see” what’s going on in various work locations. During the work from home lockdowns during the Covid-19 pandemic, this has helped keep individuals up to date on facilities and operations, but also has helped from a mental health engagement perspective that brings employees “back” into the work environment, into the core of the business that they’ve been shielded from by working from home. The visual engagement has provided employees renewed purpose of what they are doing and re-connecting them to their business.

Another re-envisioning of old processes done a new way is equipment and vehicle inspections using augmented reality tools and technologies. Organization that used to fly teams of experts to some operations site every week to physically view and inspect systems were able to do so during the Covid-19 lockdowns using remote augmented reality technologies.

Solutions of this type are great ways to get teams of individuals, armed with tablet devices that are nearby physical equipment plants to walk around machinery with the device camera enabled, and the expert “looking” remotely, directing the physical operator to check tire pressure, turn on flashlights and show the remote inspector hoses, gauges, filters so that a

"walk thru" can be completed.

The Knowledgeable Workforce

Those entering the workforce today are a whole generation of individuals who were born and raised at a time when the Internet has been pervasive throughout their lives. These individuals know how to work an online search engine better than they would know what to do in a library with a card catalog. They've had no fewer than two mobile devices they've setup and configured on their own, and downloading and figuring out "apps" is old hat for them.

And not just the entering workforce, but also earlier generation of works that have now spent more of their time on computers and the Internet than with typewriters, books, pen and paper, and are just as tech savvy. With a more tech savvy workforce, the idea that the datacenter and anything "systems related" is exclusive to the I.T. staff has drastically changed as tech knowledge and expertise has clearly distributed to the masses.

The current workforce, young and old, is not afraid of new tech tools, new digital ways of doing things, and in fact they embrace the integration of technology into their day-to-day work efforts as they typically have better tools and better technology now at home or in their pockets than they're provided at the office.

Social media is a communications medium that a good portion of this new workforce has personally used in their distribution of information to a personal network of distributed users. The reading of printed newsletters, newspapers, and lengthy emails has given way to a world of short SMS text messages, 160-character Twitter feeds, shared photos with 1-line captions, and simple likes, dislikes, and emoticons.

Empowering Not Impeding Productivity

With a more tech savvy workforce, I.T. needs to empower the workforce with tools and resources that help the workers be more effective in their jobs. I.T. needs to stop "locking down systems" intended to prevent workers from accidentally breaking their systems, to making systems and processes more open to new and innovative ways of getting the job done.

The workforce installs apps, configures apps, replaces their devices and reinstalls their apps on a regular basis on their own personal phones and tablets, so they don't necessarily need a fully configured system with the exact same icons in the exact same spot to figure out how to use their systems at the office. Granted, there are many organizations where there are a handful of users that require handholding, and many times those that need the most handholding are the most vocal. However, understand the

entire workforce, and if 10% of the workforce needs help, no need to build monolithic processes across the entire environment to support a smaller and smaller portion of those needing extra assistance.

Organizations that are able to empower their workforce to do more and to push the limits of the technology in front of them are providing their workforce with the ability to be more effective at what they do. We've called it "worker productivity" in years past and used to relate it to the increase in productivity of using a word processor to write and edit documents rather than a typewriter, or the use of email to send communications to many people than writing memos, photocopying the memos, and manually distributing the memos to users. But in this day and age, worker productivity can be enhanced by allowing the worker to use digital tools and communications mechanisms that help them be more effective at getting messages across, sharing information, and collaborating with co-workers.

I.T. departments know darn well if they don't give their workers tools they can use, the users will just sign-up for a cloud-based service on their own and use tools outside of the organization to do what they feel is best for getting their job done. So I.T. either embraces the tools and technologies the current workforce wants to leverage, or I.T. spends its time trying to prevent users from using tools and blocking productivity.

Focusing Less on the Device, and More on the Applications

Another drastic change in the I.T. industry is the movement away from managing the device, and more focus on providing applications to users. For the past decade, I.T. has provided users a device typically with Microsoft Windows loaded on it pre-configured with all of the applications the user needed. The device was locked down and tightly managed.

However, as the typical user has 3 or 4 devices these days (mobile phone, tablet, laptop, "work computer") of which many of these devices are not even owned and managed by the organization, does focusing on managing the device still make sense? The fact that the worker needs access to email, does anyone really care whether the email is on one version of mail software on one device, versus on another email software program on another device?

As long as the user has access to their email, contacts, calendar appointments, and important documents, and the user doesn't care that the interface from one device is different than another, why would I.T. care about the consistency of the application or the device. A more tech savvy user doesn't need their email program on three different devices to look exactly the same, they're fine using multiple tools as long as they have

access to their information at anytime from anywhere. What I.T. does care about is that if the employee leaves the organization, that the data is protected or potentially wiped off the devices, so it's about the data, not necessarily about the device or user interface.

Protecting Data, Not the Device

As organizations focus on what is most important to it, the focus is around the security of data. A device, a device's operating system, and the applications on a device are not the critical aspect for control. It's about protecting the data, ensuring that information deemed private or confidential is protected, or information is removed when an employee parts from the organization. So, the focus is on the data and how to control access to the data.

A very simple concept is to encrypt the data on the device and tie the encryption to the user's logon account. The only way to access the data is to enter in an appropriate "corporate logon" credential to unencrypt the content. If someone else gains access to the system, unless they have the credential information, they cannot unencrypt the content. If the individual is terminated from the organization, their logon credentials are disabled so that even if they still have the encrypted content sitting on a thumb drive, tablet, phone, or up in a cloud hosted file system, without a valid logon, they cannot enter the credentials needed to unencrypt the content they have stored.

The encryption and decryption is tied to the user's logon, not to the device, not to the operating system, not to any specific application, thus the credentials and the encryption and decryption of content can roam between devices and works whether the content is stored on a local device or up in a cloud service. When the user gets a new device or moves to a different device, their encrypted data is moved to the new device, and their logon credentials (assuming they are still valid) will continue to decrypt and re-encrypt the content. I.T. gets out of the device management business, and can remain focused on enabling business policies and supporting users instead of chasing the never-ending proliferation of devices and cloud storage mediums.

As for technologies that provide this level of functionality, since most enterprise workers logon to Microsoft Active Directory, having credentials tied to user A.D. accounts tends to be the standard in enterprise organizations. Within the Microsoft product line, Microsoft has embedded content classification technology into their Office 365 business solutions that provides policy-based content encryption and decryption. Microsoft's solutions used to only support Windows-based systems with Office-based application protection. However, in the past half-decade, a whole ecosystem has emerged supporting non-Microsoft endpoints such as Macs,

Refocusing I.T. as a Business Enabler

iPads, iPhones, Android devices along with non-Microsoft files like PDF files, TIF and JPG graphic files, and MP3 and WMV media content. For organizations with Microsoft's M365 "E3" and "E5" licensing that most organizations that use Office 365 own, this technology simply needs to be enabled and the enterprise will have a very sophisticated file-level encryption technology for its employees.

Protection by Automation, Not by Brute Force

Anyone who's raised children knows there's only so much protection one can build around the kids without putting them in a padded bubble, that the best a parent can do is educate their children, help them make good decisions, and make security and protection part of a day-to-day process. The same is true for the workforce, that multiple levels of automation and education can provide a better enforcement of policies and security than putting up barriers and attempting to brute force manage the protection of data and systems.

For the past decade, I.T. organizations have built up protective walls with network firewalls, locked down systems, and protection devices on everything within the datacenter, however as users have needed an ability to share information with others outside of the organization, because the internal systems are so locked down, users have just gone around I.T. and setup their own file sharing and content collaboration sites without I.T.'s knowledge. Security assessments of these organizations typically find a very tightly managed environment along with a completely unmanaged and completely insecure side of the operations.

As organizations loosen their security grips, provide I.T. supported methods of sharing information and communicating, both internally and externally, with automation tools that automatically encrypt secured content, with a little end user education, these organizations have better overall security in the enterprise.

Taking the model of protecting and encrypting data, organizations that set filters on data stores, filters on email transports, and filters on upload and download streams, can automatically intercept content and encrypt content in transit as well as at rest. Rather than depending on the user to think about encrypting content, content is automatically categorized, encrypted, and tied to user's credentials. As documents and messages are then moved to other devices, stored in external file sharing sites, or copied to USB thumb drives, the information is encrypted and can only be opened by authorized individuals in the organization. If the content is shared with someone, that recipient must be given explicit access to the content by the document owner. If the content is accidentally saved in a public site or a device is stolen, the only individuals that can decrypt the content are those with authorized credentials. If the individual is terminated, their access to

any and all information is disabled.

So, the change is from trying to state that data can only be stored on in-house protected systems that we all know the content will be attached and sent/saved anyway, to a process where the expectation is that all data will get out of the organization. Therefore, automating the categorization and encryption of the content to protect it from unauthorized access provides organizations a better method of enterprise security.

Monitoring to Ensure Security Protection is Working

Even the best designed and implemented security system is prone to compromise, either through malicious access, or by accidental breach. As organizations automate systems in an attempt to simplify unwanted access to information, having the ability to monitor and test content access on a regular basis ensures that security automation is working as expected.

If the organization is automating the encryption of content and testing to ensure that content is properly being encrypted both at rest and in transit, the organization can validate that content is being protected as expected. Additionally, a process of validating that only those authorized to access content remains enforced, ensures that even if someone who is not authorized to access content cannot access the content as expected.

The organization wants to validate that information stored outside of the organization is properly protected, which would include periodic checks of secured content on employee-owned devices, content stored in cloud hosted environments, content copied down to USB thumb drives, and the like.

As security shifts from protecting devices to protecting data, an organization's security personnel just have to follow the trail of data to ensure that the data the organization wants to protect is indeed being protected.

Making Way for I.T. Enablers

As more and more users become tech savvy, and the reliance solely on the I.T. expert diminishes, the I.T. technologist needs to make way for a rising role of the I.T. enabler. The I.T. enabler may not even be in the I.T. department, but could be a marketing specialist, or a business analyst, or data analyst on the frontline of the organization. If data and core applications reside in the cloud, and the consumer of the data is working from their personal tablet from home, what role does the I.T. department's personnel play in the value it provides to that individual?

It's a far different perspective than the model of the past where the consumer of data worked on a company owned desktop, sat within the corporate office, connected to the corporate backbone, and accessed data

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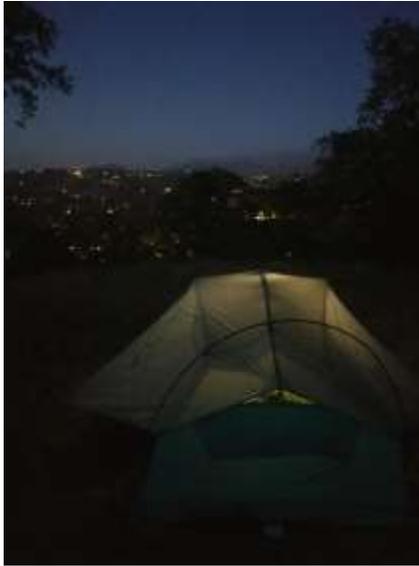
sitting on a corporate owner server. And if this data consumer is accessing critical business data, generating valuable reports, working up business models to drastically increase the revenues of the organization and/or save the organization a significant amount of money, that individual has an extremely strategic role in the organization.

This is the changing face of I.T. and how the distribution of knowledge and the enablement of external sources will forever change the role I.T. has in an organization.

Facilitating Supply from I.T.

I.T.'s role in the new world environment shifts from the controller of information and systems, to one where I.T. facilitates supply to meet demand in a secured and automated manner. Similar to the days where the important person in the village was the one that dug the well and made the aqueducts to bring water to the city, today it's the person running the water treatment plant that watches dials and makes sure the right valves are turned on to ensure water continuously flows to meet the demands of its consumers. I.T. will play an even more important role here and into the future because when I.T. is doing their job right, the users in the organization will have access to the data they want, when they want it, from any device they're using, and the user will never have to worry whether the content is secured, protected, backed up, and properly managed. It'll take as much, if not more work and planning to make I.T. work right in the new world of I.T., but from a completely different manner of operations than in the past.

The I.T. landscape is much broader today with data on a multitude of devices and stored not only on corporate owned and managed systems, but on employee-owned systems as well as content stored in the public cloud. I.T.'s role has expanded, but in the transition to the new world environment, I.T. has to do things very differently than in the past. The new model with old processes and systems won't work. There's a need for distinct changes in storage, management, protection, control, and automation that will allow I.T. to be the enabler for an enterprise and play a critical role in the overall business success of the enterprise.



10 THE FUTURE PATH FORWARD

As organizations re-envision their I.T. tech strategy and finalize their path to modernization, the question then becomes “what next”?

Be Aware and Well Informed

The first piece that has been important to executives has been to be aware of the changes going on, as the pace has been so rapid, and changes caused by the disruption of the global pandemic has completely uprooted everything that used to be known and normal to a very fluid and dynamic global marketplace. It’s not only difficult to even keep up with the consumerization of technology, but how day to day things that have been the same or similar for decades are suddenly being done in completely new and different ways.

The key for executives has been to look for threats in their business and industry, not just from traditional competitors, but from new entrants, like global or out of area providers, how supply chain interruptions impact an organization, and how startup organizations radically change operations virtually overnight.

Be Fast and Nimble

Executives have found that their long term 5-year, 10-year, and beyond planning cycles have been disrupted by global changes of the recent pandemic, plus with entrants in their line of business, organizations are now doing shorter 6-month and 12-month planning cycles. Long term plans and investments that take years or decades to play out could send the organization down a path that will limit its options as the global marketplace and consumer demands quickly change.

Manufacturers that used to spend years buying and building plant facilities are finding it difficult to compete against competitors buying excess production capacity from others and simply buying what they want, when they want it, with a much faster time to market.

Much of the watch words in the new world markets has been fast and nimble, the ability to plan, execute, and deliver in a fraction of the time than before.

Product and Service Diversification

The word diversification is not purely diversifying industries but diversifying the approaches an organization has in the same or similar markets and processes. The organization may continue to “do things it always has done before” (to continue what it has been doing), but open up new and modern ways of doing the same thing, so that it has parallel paths of the same operations to build new while maintaining old.

In a manufacturing scenario, the organization may not switch all production away from existing plant facilities or stop all construction of future plant operations, but supplement production facilities with “pay as you go” manufacturing operations so that the organization splits its capacity across multiple modes of operations.

In a retail sales operation, an organization may not close down all retail operations in all markets and drastically change to an online only model, but rather expand an online model in parallel to the traditional brick and mortar operation to diversity it’s delivery capability in a way to capture opportunities in a shifting global marketplace.

The key has been to look to diversification and not remain stagnant for too long that would prevent the organization from being nimble and warding off competition in emerging markets and market segmentation to faster moving competitors.

Broad Set Profitability

Venture capital or stock market funded enterprises don't always have the same expectations for profitability as many other enterprises, as such "competing on profitability" may not apply equally to all enterprises. If an organization wants (or needs) to compete with such enterprises, it needs to be in it for the long run, financing its operation from the profitability of other business sectors than trying to compete profitably against an organization not setup in the same manner.

This is where the diversity of service offerings can help an organization offset costs in other business areas as emerging areas grow or being forced to compete in a generally non-profitable market or industry sector.

There's also a need to change the mindset of management, investors, and shareholders that short term profitability and growth levels may be hindered as investments in long term markets, market competition areas, and opportunity space takes precedent as a deep-rooted organization maintains a long term competitive market stance than focusing purely on short term profits.

Innovate with Passion

Disruptors in the global marketplace are doing so with passion, commitment, and velocity as they have nothing to lose by entering new markets and looking to chip away at the market share of traditional enterprises. Incumbents in a marketplace or those with market position need to be able to innovate and compete with the same level of passion, commitment, and velocity of change to retain their foothold in their area of business.

The challenge for deep rooted industry leaders is there has been a long-term historical predictability on profitability and business growth that changes as new entrants encroach on the market. There's a need to retain market share and business longevity in competing on a global level with new and different business models impacting the day-to-day operations of a business.

Assess Employee Change

As a business changes its method and mode of operations, it needs to determine whether its current workforce will be able to adapt and change as quickly as the business requires and whether those who have worked for years with the organization in one mode would even succeed and thrive in

The Future Path Forward

the new environment. Successful employees in an established business model may have been happy in the steady pace model of the past but be unhappy and unsuccessful in a dynamically changing new business model and environment.

Rather than retraining employees into the new model, an organization may build the new business model with new job descriptions, and hire new employees and rehire existing employees into the new model to ensure those shifting over are ready and willing to accept the way the new business is run and is ready to tackle the associated work ahead of them.

Businesses in transition are constantly assessing the fit of their personnel, and as quickly as the business changes, so must the mindset, skill, abilities, and flexibility of its workforce.

And where employees are identified as “keepers”, key contributors in the new business model, leaders should present them with more than just a traditional compensation and benefits package. Today’s “modern” employee needs a culture focused on employee involvement and on employee satisfaction. Some best practices include offering employees flexible, personalized work arrangements that challenge some, provide others a clear path for advancement, and still others work-life balance. And, despite technology that make digital communications easier, employees need and want collaborative communications.

Contracting for Change

Many organizations have found that as they have built a new business model, it was helpful for them to contract individuals early on to build the dynamic process and then hire and/or retrain existing employees into the new business model over time. This has allowed organizations to quickly bring on personnel, but without the commitment required for long term employment, should the new model need to be modified or changed.

When the new model achieves success, the organization can transform contractors into permanent employees, hire new employees to the new business model, and/or retrain existing employees into an already well defined and tested business model. The flexibility enables growth and change in fast paced, new, and dynamic business models as the organization adapts to variations in its business.

Enabling Technology to Solve Business Challenges

Technology has proven to be a contributing factor that helps drive these

fast-paced changes. Organizations have leveraged technology solutions for communications, information sharing, and collaboration to help them solve their business challenge along the way, improving business to business, and business to customer communications.

Organizations have utilized both internal and external professionals from around the globe to extend business models beyond borders and regions in ways that were not possible prior to the readily available methods of video conferencing and instantaneous data sharing.

The power of data analytics and powerful historical information databases allows organizations the ability to analyze competitive landscapes and threats, and extend their operations into successful business models more rapidly than ever before.

Leveraging Data Analytics to be Fully Informed

Data provides information about the past and has been the method of information analysis for years. However, utilizing powerful business intelligence tools and resources, organizations can perform predictive analysis queries to project potential revenues, costs, and quantifiable market potential into the future.

Data systems provide for the integration of internal data with externally available information. Today's modernized executive should have a "dashboard" view accessible on their desktop, laptop and mobile phone of key performance indicators, internal and external information points, and measurements and assessment milestones relative to the organization's journey to change.

Wrap-Up

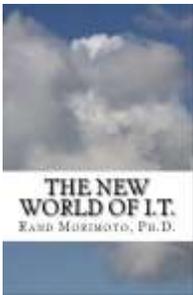
The global marketplace today is different than it was just two decades ago or even just two years ago. There's little indication that the world will revert to the way things were before. With change at our footstep and in our future, executives have the option of letting it happen around them or to re-envision changes, leveraging all that is available to build a successful business and operational model now and into the future.

This can be a scary time for executives caught flat footed and ill prepared to tackle what's ahead of them. However, for forward thinking professionals, this is a very exciting time with so much opportunity for innovation in developing new ways of doing things, being in a first mover position, and leading the marketplace and industry and never looking back.

MINI-BOOK STRATEGY SERIES

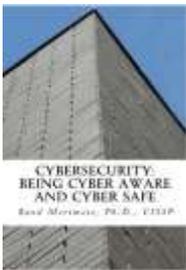
This is the eleventh book in the Mini-Book Strategy Series that has taken business executives through a real time journey over the past decade on changes “Cloud Computing” and the impact continuous technology changes have had on enterprises. The books have been written from meetings, interviews, and ongoing dialogs with business executives around the world, with shared best practices what organizations are doing to plan, prepare, and take advantage of the changes going on in the fast-paced global marketplace.

In order and sequence of release:



New World of I.T.

First of the series from 5+ years ago, the “New World of I.T.” identified a *change* going on in the world as “cloud-technologies” were making their way into mainstream businesses, and the way organizations were going to be leveraging technologies in their businesses was about to change.



Cybersecurity: Being Cyber Aware and Cyber Safe

Second up in the series was a book on Cybersecurity and the impact that global digital security threats were going to push organizations to make rapid changes in how they store, protect, and manage their digital assets to ward off the encroachment of cyber-criminals.



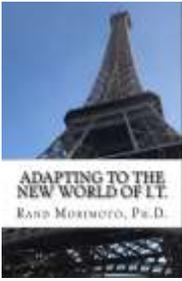
Handling Electronically Stored Information (ESI) in the Era of the Cloud

The third book in the series dove into best practices how organizations are able to address the transformation to the cloud, with cybersecurity threats, and handle the security, protection, and management of digital assets wherever they reside.



Application and Datacenter Modernization

The fourth book in the series took into account that over the previous two years, organizations have extended past the early adopter phase of organizations migrating to the cloud, to the full-blown transformation of organizations planning and executing on their transition of their applications and their datacenters to modern cloud platforms.



Adapting to the New World of I.T.

Fifth in the series is a title on the adaptation organizations go through as they have changed the way they're administering, managing, and maintaining new ways of cloud-based security, data storage, I.T. administration, and management.



Shifting I.T. from Technologies to a Business Services Enabler

The most recent of the series, and #6 in line addresses what happens to I.T. operations after an organization have completed their “migration” to the cloud and their modernization of I.T. This book covers how I.T. gets out of the day-to-day role of managing servers and datacenters, and move into a more consultative model helping their organization leverage technologies to improve the competitive advantage of the organization.

ABOUT THE AUTHOR



Rand Morimoto, Ph.D., MBA, CISSP, MCITP: Dr Morimoto has been a visionary and leader in transformational change, morphing his business from a retail storefront in the 1980s, through being a multi-million dollar a year supplier of hardware and software to some of the largest enterprises in the world in the 1990s, to being the world's experts in on-premise datacenter implementations in the 2000s, to being on the forefront of public cloud migrations and security compliance in the 2010s, to yet another transition of helping enterprises complete their I.T. modernization in preparation for the dynamic remote and mobile environment kicked off at the start of the 2020s thanks to the pandemic caused by Covid-19.

Dr Morimoto has a unique blend of deep technical knowledge and expertise, and an academic background in organizational behavior and organizational management. Dr Morimoto describes himself as a “tinkerer” of technologies, rolling up his sleeves and being an early adopter testing technologies months and years before the products are released to the general public.

Dr Morimoto is a deep-rooted academic, a lover of knowledge and information that led him to pursue his studies in an MBA program, a Doctoral program, and ultimately in the role of being on the governing board of a University.

Dr Morimoto shares his insight with organizations, helping them increase business efficiencies, lower operational costs, and take advantage of technologies to help organizations be a business enabler and first mover in their business operations and field of business.