EAT-ing your way to a better IT Future

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Executive Summary

For anyone who’s worked in IT operations, the challenges are familiar. All your time is taken up with business-as-usual (BAU) activities, leaving little room for projects or process improvement. To the finance organization, you’re overhead. To the business, you’re too slow and too expensive. Yet you’re not funded for innovation and agility, which means you’re forced to say ‘no’ far more often than you’d like. You feel as though you have a big target on your back, and everyone is aiming at you. Cloud technology isn’t helping. Now that users can get what they want with the swipe of a credit card, they’ll go around you if you can’t meet their needs right away.

How can you stay relevant? Better yet, how can you move from being a vendor to a partner? The first step is to free yourself up from constant firefighting and reactive activities so you have more time to work with your customers. This paper offers three steps to that end:

1. Eliminate
   - Look for things that take time and resources but add no value. Think like a 3-year-old and keep asking ‘why?’ about existing processes until you either get a valid answer or you determine there is no good answer. When you uncover the latter, become a process assassin.

2. Automate
   - Build well-defined, repeatable processes for routine work. Look for ways to automate these processes, such as scripts, tools, and templates. Develop a service provider mindset: if you had to deliver a service at scale, how would you do it quickly, reliably, and cost-effectively? Automation is the key.

3. Transfer
   - After eliminating the unnecessary and automating the repeatable, you’re likely to still be left with things you’d rather not do. If it makes economic sense, consider moving some of your operations and applications to managed service providers. Pay someone else to get stuff off your plate so you can work on more important things.

When you’re finished, you’ll find you have more time for higher-value activities like strategic planning and customer projects. You’ll find that EAT-ing is a great way to increase your value and your job satisfaction.
Background

So many requests, so little time
Most IT shops operate under the principle of balanced pain. On one side, there is the pain of users and projects having to wait for assistance from IT. This is caused by IT staffing being kept as low as possible – and sometimes lower. On the other side is the pain of IT’s cost to the business. Simply put, companies would rather spend their money on new business initiatives than ongoing operations.

When IT is viewed as overhead, financial pain often trumps user pain. Companies strive to minimize their IT costs, which results in bare-bones staffing levels and long request queues. In response, IT organizations are admonished to “work smarter, not harder”.

This paper is for IT organizations that wish to increase their productivity. The goal is to reduce time spent on repetitive, time-consuming tasks. The result is increased time for strategic, higher-value activities, which enable business growth and are more fun for participants.

No time to learn
Technology changes rapidly, especially information technology. IT staff is constantly challenged to maintain and expand their knowledge. Finding time to learn, however, is a huge and ongoing problem. If they’re lucky, IT admins may get to go to one or two conferences or training classes a year. Any other skill building typically takes place on their own time.

If you really want to annoy a systems administrator, mention a new computing, storage, or networking technology you’ve just read about and ask them when it will be available at your company. It isn’t that they don’t want to learn or use new technologies. They’d love to keep their skills up to date, both to address current challenges and to list on their resume. But for them, repeating buzzwords and acronyms isn’t enough. They must have sufficient mastery to design, implement, operate, and support anything that’s used in the environment ... all of which takes time. And for most IT operations people, time is always in short supply.

The specter of Shadow IT
Businesses exist to create value. IT organizations exist to support the business in that mission. To the extent they do so, they are valuable. To the extent they delay or prevent the business from achieving their goals, they are a barrier or, worse, the enemy. In the past IT had the luxury of knowing they were the only available option, so they could say ‘no’ with impunity. This is no longer the case, though, for many types of services and industries. The availability of agile, pay-as-you-go alternatives means that businesses can more easily bypass “official” channels and get what they want, when they want it. They can create islands of computing – known as shadow IT – outside the visibility and control of central IT.

Make no mistake, shadow IT is an existential threat to IT departments. IT can respond in one of two ways. They can take a heavy-handed, seek-and-destroy approach to non-sanctioned activities. They have ample justification to do so, including the fact that shadow IT:

• Opens holes in the data security perimeter
• Threatens the business’ ability to comply with audit and governance requirements
• Blurs financial tracking in many ways including total IT costs, cost of goods sold, and profitability
• Makes employees less productive at their core job responsibilities, since they spend time procuring and managing IT services
Groups that engage in shadow IT don’t do so because they yearn to be systems administrators; they do so because they have an unmet need that prevents them from doing their jobs.

All of these are reasonable arguments against shadow IT, but they miss the key point. Groups that engage in shadow IT don’t do so because they yearn to be systems administrators; they do so because they have an unmet need that prevents them from doing their jobs.

For that reason, an alternate approach to shadow IT is needed: seek-and-embrace. Think about it. Isn’t it IT’s job to understand customers needs and to meet those needs whenever possible? If your customers are bypassing you, don’t you want to know why? Couldn’t you use this information as justification for changes to your current way of operating?

When properly understood and embraced, shadow IT is an opportunity, not a threat. The key is having sufficient time, resources, and skills to transition shadow IT to central IT’s control.

That’s why EAT-ing your challenges is so important.

The first step towards increasing IT productivity is to stop doing low-value activities. The concept is illustrated in the following urgency-importance matrix, attributed variously to J. Roscoe Miller, Dwight D. Eisenhower, and Stephen Covey.
E - Eliminate

Begin by logging and classifying how you spend your time. Then rank these activities by their importance. Finally, identify Distractions that consume a significant amount of your time, and look for ways to eliminate them. This section offers some suggestions.

Delete, then archive

The concept of big data encourages a data hoarding mentality. But retaining data comes at a cost. Is it really necessary to store everything forever? How much business intelligence can be gleaned from, say, year-old server log files? Do you really need to retain file shares for users who left the company a long time ago? And even if the answer might be 'yes' how many copies of the same data should be retained?

One of the best ways to simplify operations is to reduce the infrastructure footprint. This has the dual benefit of fewer systems to manage and lower operating costs. For this to be an effective strategy, though, companies need data governance. This involves defining classes of data with corresponding retention policies. It can also mean investing in tools for data de-duplication – an investment that nearly always has a very short payback.

Data governance has another important use. Just because a certain class of data may need to be retained for a required period of time, it probably doesn't need to be kept on expensive storage. There are many options for long-term storage and archiving of data, from tapes stored with an off-siting service (ugh), to content-addressable storage, to cloud-based vaulting services. As cloud storage prices continue to decrease, the last option can be particularly appealing. Rather than having to maintain tape devices or storage arrays so you can read old data in a variety of formats, cloud storage can store data in more of a near-line format.
Remove non-actionable alerts

When looking to reduce noise in the IT environment, monitoring is a great place to focus. That isn't to say that all monitoring should be turned off, but it's best to heed the advice of Stephen Covey and ‘begin with the end in mind’. The purpose of monitoring is to be able to detect and react to conditions in the environment that require further attention. It is not to monitor absolutely everything and to flood the Network Operations Center (NOC) with alerts.

As anyone who has configured monitoring knows, it is part science and part art. If thresholds are set too loosely, Operations will miss important events. If they're set too tightly, Operations will receive lots of false-positives. Many groups take the approach that it's better to err on the side of caution. They accept a higher rate of false-positives as a result. However, this frequently leads monitoring organizations to become desensitized. Rather than responding immediately to an alert, they may wait to see if it recurs. While this is not ideal – and almost certainly not what the implementers of the alerts intended – no one likes being woken up in the middle of the night by a phantom event.

There is a better way to set up monitoring than debating how tightly to set thresholds. Start by reviewing what is supposed to happen when an event fires. Is there a defined response, or is this left to the judgment of the recipient? If it’s the latter, the system is not ready to be put into production.

The easiest way to eliminate unnecessary events is to create runbooks where every known alert has a defined response. The emerging field of AI Ops offers additional promise in this regard, whereby unusual patterns are automatically detected based on prior data.

Bury your problems

Snowflakes have no place in production IT operations. One-off’s are the enemy of reliability. They may have started innocently enough – a temporary workaround or a system that was never meant to be placed into production. Before you know it they’re mission-critical, yet they’re virtually unsupportable. Documentation is likely to be minimal or non-existent. The original creator may have left, moved to another position, or simply forgotten how things work. These systems are described in “The Visible Ops Handbook” as ‘fragile artifacts’.

The first step in eliminating fragile infrastructure elements is to find them. This can involve the use of discover tools or of a robust configuration management database (CMDB). After all, it's nearly impossible to manage infrastructure elements that you don't know exist. As with alerts, all production systems should have runbooks. These are defined as “a routine compilation of procedures and operations that the system administrator or operator carries out”. Once a CMDB – or at least a reasonably reliable asset inventory – exists, it's time to audit. This involves taking a physical and logical inventory of all systems, configuration items, and infrastructure elements. When complete, this is reconciled against company standards. Orphans are not to be tolerated. They may be cute in Broadway musicals, but they have no place in IT.

The process of inventory > compare > update is iterative. It may never be 100% accurate, but it helps to identify systems that require further attention. This is likely to require considerable time and effort, which is why so few companies do it. But consider the alternative. What happens when a critical system breaks that no one knows how to fix? The prospect of this happening isn’t mere speculation or fear/uncertainty/doubt (FUD); the chance of any system or component failing is a statistical certainty. Know how to respond, or be prepared or suffer the consequences.
Eliminate unnecessary processes

Defining and enforcing a process framework is a sign of IT maturity – to a point. But when processes are used to delay or block action, as described in Level-1 of the Capability Immaturity Model, they prevent rather than promote productivity. This idea is explored in-depth as it relates to software engineering in the book AntiPatterns. Here are two examples of processes that can suck the life out of an IT organization and its customers.

• Purchasing delays – For many organizations, budgets are just the beginning of the approval process. Even when something is planned, requested, justified, and approved in advance, it may require another complete round of negotiations when the time comes for execution. This only adds delay and busy work. Time saved in procurement translates directly into faster delivery.
• Multiple level approvals – Requests within highly hierarchical organizations often require approval from multiple people. Many of these are of the rubber-stamp variety, where the approver has little knowledge or involvement beyond their positional responsibility. As with purchase requests, streamlining or eliminating approvals for other processes reduces delays.

You can probably think of many more examples within your own organization. Don't accept them as a necessary evil. Instead, channel your inner Howard Beale and start shouting “I'm as mad as hell, and I'm not going to take this anymore!”
At their most basic level, computers are automation tools. Coders write programs. These programs are executed and deliver repeatable outputs time after time. Humans are error-prone. They mistype. They forget steps. They get bored. Software does exactly what it's told, every time. This is why automation in IT operations is a vital component of highly available, mission-critical operations. Your most skilled administrators and developers should not be constantly consumed with busy work. They should be spending their time creating robust design templates that are used as the basis for automated processes. This is what DevOps is all about.

Almost all IT organizations employ automation to some extent. Examples may include:
- Predefined monitoring and alerting
- Automated operating system installation on a server or virtual machine
- Automatically assigned network addresses from an available pool

If some automation is good, more automation is even better. In this section, we examine several types of IT automation and their benefits.

“Does it scale?”
While the positive aspects of Moore's Law are clear, there is a downside. Too often, the ever-increasing speed and power of information systems is used to hide the sins of poor architecture. For anyone interested in service design guidelines, there is no better place to look than James Hamilton's 2007 paper “On Designing and Deploying Internet-Scale Services” in which he cites the following core tenets:

- Expect failures. A component may crash or be stopped at any time. Dependent components might fail or be stopped at any time. There will be network failures. Disks will run out of space. Handle all failures gracefully.
- Keep things simple. Complexity breeds problems. Simple things are easier to get right. Avoid unnecessary dependencies. Installation should be simple. Failures on one server should have no impact on the rest of the data center.


Scripting and templates
Contrary to the common adage, laziness rather than necessity is the mother of invention. A really skilled, really lazy systems administrator can do amazing things with scripting. One line of well-written AWK code with a clever regular expression can do more than a dozen lines of code in other languages. Scripting allows the administrator to define how to translate inputs to outputs, which is the core of automation. After all, why would anyone want to perform the same actions over and over again when computers can do it much more quickly and accurately?

Similarly, templates provide an abstracted framework for automation. By mapping out how a process should work and then defining and validating inputs, templates eliminate most common errors. As with coding in general, the basic rule for templates is this: if you find yourself doing the same sequence of steps more than twice, it's time to create a template.

Coupled with application programming interfaces (APIs), an automation mindset gives rise to infrastructure as code (IaC). In this brave new world, new capacity and environments can be brought online automatically and without the maddening request-wait cycles common to traditional IT.

Automation tools
Scripts, programs, and related utilities that focus on a particular set of functions form an automation toolset. These tools can be tremendously valuable in reducing time and increasing the accuracy of operations tasks. Some are domain specific; others are more general-purpose. The next page shares several examples.
Some automation tools are specific to a particular technology stack such as storage management, network management, or cloud management. Some products work only with a particular vendor’s technologies while others are vendor-agnostic. For example, deployments within Amazon Web Services can be templatized using the AWS CloudFormation service. Alternatively, organizations looking for tools that are vendor-agnostic and that also work on-premises may choose a tool such as Terraform from HashiCorp.

Management platforms
Automation varies in its complexity. At its most basic, simple scripts are used to automate routine tasks. Collections of scripts and utilities can be combined to form a toolset. Beyond this, organizations may choose to implement automation platforms. These can serve as a manager-of-managers to control and orchestrate functions across multiple functional areas. The goal is a “single pane of glass” view across systems and operations. Management frameworks vary in focus, complexity, and target audience. Some are built for large enterprise environments or even with multi-tenancy. These are designed to deliver a wide variety of functions. In legacy on-premises environments, examples include suites such as HP Business Technology Optimization (formerly OpenView), CA Unified Infrastructure Management (formerly Unicenter), and IBM Tivoli. These tend to be highly complex. In cloud and/or hybrid environments, cloud management platforms (CMPs) serve similar roles, but often with more flexibility. Because of their cross-vendor focus, CMPs serve more as integration and orchestration platforms.

The key when evaluating a management platform is to find a solution that solves your specific needs most completely, in the shortest time, at the lowest cost. While these may sound like mutually-exclusive requirements, they don’t have to be. Simplicity has value, and projects to implement complex tools often fail. In the end, the most powerful tool is the one that gets implemented and used.

### Domain Focus Areas

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<th>DOMAIN</th>
<th>FOCUS AREAS</th>
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| Systems        | • Configuration Management  
                 • Operating System Build Automation  
                 • Patching Automation and Compliance Monitoring |
| Network        | • IP Address Management (IPAM)  
                 • Domain Name System (DNS)  
                 • Traffic Management & Optimization |
| Security       | • Intrusion Detection / Prevention Systems (IDS / IPS) 
                 • Security Information and Event Management (SIEM)  
                 • Data Loss Prevention (DLP) |
| Reliability    | • SNMP Monitoring and Alerting  
                 • Agent-Based Monitoring and Alerting  
                 • Event Correlation |
| Application    | • Application Performance Monitoring / Management  
                 • Transaction Monitoring Tools  
                 • Load Testing |
| Performance    | Software Development                                                                 |
|                | • Source Code Control  
                 • Build Management  
                 • Continuous Integration |
Okay, so you've made it through the first two stages. You've eliminated piles of pointless processes, and you've automated anything that is done more than twice. Even so, you're still left with routine—but-important tasks that take valuable time away from you and your staff. What's an IT director to do? For that, we can take a page out of the Tom Sawyer book of management. We'll get someone else to do the work for us.

While you may not be lucky or persuasive enough to get others to pay you to do your work, there are plenty of options if you're the one who's paying. Candidates for transfer can range from the very specific (e.g., sending your backup tapes to an offsite warehouse) to the comprehensive (e.g., working with a managed service provider to operate and support both on-premises and cloud workloads).

**IT Outsourcing**

The relationship between business and IT has long been a rocky one. Many financial managers view their IT organizations as profligate children, always wanting more and never doing quite what they're told. So it's no surprise that enterprises have eagerly embraced alternatives. The trend started in the late 1980s. At that time, computing was dominated by corporate and departmental compute clusters. Managing these complex systems — so the reasoning went — was not the business’ core competency. The availability of a highly-skilled, lowly-paid workforce in India and other “offshore” locations offered a tempting alternative to in-house IT. The result was IT outsourcing (ITO) whereby enterprises were glad to pay others to make their IT problems someone else's problem.

Throughout the 1990s and well into this century, ITO usage has been common with enterprises large and small. ITO’s popularity has waned in recent years, though, due largely to increasing resource costs. Additionally, ITO was always an imperfect solution that simply shifted responsibility without eliminating underlying challenges. The rise of first virtualization and then cloud computing have offered real alternatives to traditional IT complexity and operational drudgery. Still, selective outsourcing can be very effective. The best candidates are tasks and services that are well-defined and can effectively be done by someone else. A good example is the service desk, which responds to end-user and customer requests using a well-documented knowledge base along with tiers of skilled support personnel.

**Cloud Service Providers**

Running your own infrastructure may be required for highly specialized or highly regulated operations. If your infrastructure and operations needs are more commonplace, it makes a lot of sense to have someone else handle them. After all, cloud service providers (CSPs) are in the business of deploying, operating, and supporting IT services. And couldn't your capital and IT resources be put to better uses than data center management and business as usual (BAU) IT activities?

Cloud service providers offer a wide range of well-defined services that can take the place of owned, on-premises equipment and applications. These range from basic infrastructure as a service (IaaS), to application programming platforms as a service (PaaS), to fully managed application software as a service (SaaS). Similar to large electric utilities, CSPs operate at a scale well beyond most enterprises. Similarly, the resources they devote to areas like security, capacity, and resiliency far exceed that of their customers.

Consider IT security, for example. CSPs design services to scale to the largest of environments and threats, and they then offer these to all their customers. With cloud, even small companies can afford state-of-the-art security services. This isn't to say that all services and applications that run in public clouds are perfectly secure. The situation is best summed up by Amazon's Shared Responsibility Model which states that the CSP is responsible for security of their cloud, while customers are responsible for security in their cloud. So while CSPs give their customers great tools to work with, it's still the customer's responsibility to use them effectively and to implement proper application processes and safeguards.
Professional and Managed Services

Now that you’ve moved all your operations to the cloud and shut down your corporate data center, you’re out of the IT business, right? Not so fast. As with security, application design, deployment, operations, and support are shared responsibilities. This is where professional and managed service providers can help.

Professional services providers can take on partial to total responsibility for a wide range of activities, spanning:
• Strategy – helping clients establish high-level goals and planning roadmaps
• Assessments – determining a client’s readiness and capabilities for a particular project
• Architecture – implementing best practices for systems design and operations
• Implementation – deploying applications, services, capabilities, and resiliency
• Remediation – fixing and redesigning problematic components and services
• Optimization – tuning for performance, cost, or other important operational goals

What these all have in common is that they are project-based, meaning they are time-bound. For ongoing operational needs, managed service providers (MSPs) can unburden your staff of BAU work. MSPs take on responsibility for service delivery, operations, support, and tuning while providing service level agreements (SLAs) that are more specific and enforceable than those provided by in-house IT.

When you run your own infrastructure, you’re responsible for installation, and break-fix, and technology refreshes, and patching, and a myriad of other operations tasks and technical minutiae. With an MSP, those responsibilities are no longer yours to worry about. Capable MSPs can cost-effectively operate and support customer applications and systems at high service levels, freeing you and your team to focus on higher-value activities that contribute to business growth and transformation. And isn’t that where you want to be spending your time?

Getting SaaS-y

Perhaps your needs can be met by an application that’s delivered in a software as a service (SaaS) model. If so, all of the operational systems and management become the provider’s problem. Some applications are great candidates for SaaS such as sales automation, payroll, and human resources functions. Other, more complex applications like enterprise resource planning or business specific functions are not as well-suited. As with outsourcing, the best candidates for “SaaS-ification” are ones that are common across many companies and that don’t require lots of customization or integration with other applications.
Congratulations! You’ve eliminated unnecessary work, automated routine tasks, and transferred ongoing operational activities to someone else. What did it get you? With any luck, the answer is time. In many ways time is more valuable than money; it gives you and your organization the ability to work more closely with your customers and to add more value. This, in turn, enables you to remain relevant and to increase your influence.

Here are a few ways that EAT-ing your IT challenges will make both you happier and more effective.

**Maintaining control**

As discussed in the section on shadow IT, organizations within the business turn to alternate providers when they can’t get what they need internally. But assuming you now have the time, resources, and available skills to meet their needs, that won’t be an issue. If you can deliver services with the agility and flexibility of a cloud service provider while remaining cost-effective, you’ll be the business’ first choice rather than their last resort. In return, you’ll be able to maintain control of the IT environment. You’ll have greater visibility into information and data management, enabling you to enforce security requirements. When your company’s auditors question you about processes and key controls, you’ll be able to answer clearly, completely, and honestly.

**From vendor to partner**

It’s axiomatic that systems are expected to run reliably. Just as electric utility customers only notice the power when it goes out, the business may only notice IT operations when applications are down. This is a no-win position that results from being viewed as a vendor.

The better alternative is to act as a partner. For that to happen, you have to spend less time toiling in anonymity and more time on high-value projects. Freeing up time in your schedule allows you to spend more time with your customers. You can attend their meetings. You can participate in their sprints. And most importantly, you can add value in critical technology areas that matter to them.

Enjoy work for a change

Imagine being excited about coming to work each day. Your day is filled with stimulating challenges. You interact with people across business functions and management levels. They actively seek out your help and advice. They recognize and appreciate your expertise. Your position is secure, and your future is bright.

If this sounds very different from your current job, don’t sit passively by hoping things will change or worse, become a victim. Change starts with you. Don’t ask permission or wait for an invitation. Start EAT-ing!
About Taos
Taos, headquartered in San Jose, California (USA), empowers enterprises to operate efficiently, rapidly innovate, and scale their business. As a comprehensive Technology Solutions Partner for nearly 30 years, Taos simplifies today's complex digital landscape by providing both strategic and technical guidance while implementing transformative solutions. The company specializes in cloud strategic consulting, migration, and 24x7x365 operations and managed services powered by its DevOps practice. For more information, please visit http://www.taos.com.