



# INFRASTRUCTURE ECONOMICS: WHAT IT LEADERS CAN LEARN FROM THE CFO ORGANIZATION (AND VICE VERSA)

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## INTRODUCTION

As businesses transform their organizations to meet the demands of a hypercompetitive digital economy, one of the more impactful changes is the blurring of organizational lines that formerly defined business functions. Today, all employees take ownership in achieving business goals; and decision makers, representing diverse points of view, are likely to have a say in investments that impact achievement of those goals.

A key example is the expanded purview of the IT organization. IT organizations that once focused primarily on asset management now take responsibility for achieving strategic business goals. At the same time, line-of-business employees have greater influence over technology decisions and purchases. In a 2014 Frost & Sullivan global survey, 63% of line-of-business managers said at least some technology spend comes from their own (non-IT) budgets.<sup>1</sup>

Wielding the most influence over technology investments is the organization that holds responsibility for the company's finances: the office of the CFO. Leaders in the CFO organization not only utilize IT services to run their operations, but serve as stewards and drivers of company financial health. As the IT organization makes important decisions regarding investments that will support achievement of business goals, the CFO's organization is likely to be an important partner and advocate. For that reason, it is important for IT and finance leaders to fully understand one another, to "speak the same language," so they can come to a determination as to which investments are best for the business.



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This insight helps Infrastructure and Operations leaders understand how to include financial factors in their assessment of infrastructure options, including both public cloud and premises-based IT, both traditional IT and cloud-native app delivery. The paper presents decision factors from the CFO's perspective—a view that extends well beyond top-line costs to the impact of the investment on corporate operations, including workforce management, productivity, cost deferral/avoidance, risk management, and more. Finally, the paper provides guidelines for determining critical operations metrics that businesses should be tracking, and how such metrics can provide a quantitative and valid assessment of total cost of ownership for various IT infrastructure options.

<sup>1</sup> 2014 Frost & Sullivan Global Cloud Survey. For more information about this or other Frost & Sullivan surveys cited in this report, visit [Market Research and Industry Analysis by Frost & Sullivan](#).

## DEBUNKING COMMON MYTHS ABOUT IT FINANCIALS

IT managers normally think of investments in terms of budget and costs; primarily considering *whether* the approved budget can support a desired purchase, and *how difficult* it might be to request additional funding. Fully 32% of IT decision makers surveyed by Frost & Sullivan cite “acquiring budget” as the top challenge to implementing IT transformation initiatives.<sup>2</sup>

This perspective is often fueled by common myths regarding IT financial decisions. Such myths (and recommendations for addressing them with your colleagues in the CFO’s organization) include the following:

### **Myth #1: The CFO just wants to cut costs and limit spending.**

Not true. The CFO’s organization is charged with investing wisely for business growth, not slashing budgets. No business ever cost-cut its way to greatness.

- When speaking with your CFO colleagues, focus on how the investment will yield business value. This includes looking beyond top-line costs, and considering measures of value that include the benefits the project brings to the business.

### **Myth #2: Opex is better than capex.**

Not true. Both capital expenses (capex) and operating expenses (opex) have their place in IT budgets. Opex may be considered more flexible, which may mean business leaders are more willing to approve spending from the operating budget without a strong business case. But—like a consumer’s choice to purchase a home rather than rent—a wise capital investment in IT infrastructure can provide strong and consistent value to the business into the future.

- When speaking with your CFO colleagues, instead of focusing on “capex vs. opex,” discuss which infrastructure model delivers the greatest value over the long term.

### **Myth #3: Leasing is preferable to ownership from a cash flow perspective.**

Not true. Similar to the opex versus capex discussion, IT organizations may mistakenly assume that budget-friendly monthly payments are available only with leases, and that ownership requires an onerous upfront cash infusion. In fact, innovative “ownership” models are becoming more popular. Flexible payment options may be available that align costs for premises-based equipment with capacity usage, thus introducing a cloud-like payment model into the enterprise data center.

- When speaking with your CFO colleagues, discuss the company’s cash flow needs, and consider how innovative usage-based payment options can provide flexible terms of ownership.

### **Myth #4: Everything is moving to the cloud, so there’s no point investing in the data center.**

Not true. If you think of your data center as a short-term solution, it’s understandable why you might fall for this myth: nobody wants to put a new transmission in their jalopy if they’re planning to get rid of it. But the reality is

<sup>2</sup> 2015 Frost & Sullivan Cloud User Survey

that in a hybrid environment, your corporate data center will be an important part of your IT infrastructure for a very long time—maybe as long as your company exists. In a Frost & Sullivan survey, IT decision makers say they expect over half of workloads—including critical financial workloads and sensitive databases—to remain in the premises-based data center into the future, due to factors such as control, security, cost-effectiveness, and inability to virtualize IT assets.<sup>3</sup> Businesses that only do minimal maintenance on existing infrastructure will incur additional hardware and software costs as the infrastructure ages. Even more importantly, they will miss the opportunity to leverage technology enhancements that optimize workloads and deliver strategic value today.

- When speaking with your CFO colleagues, discuss the tangible benefits you can realize now by upgrading to flexible, high-performance next-generation infrastructure.

### **Myth #5: Public cloud is always the cheapest option for running a workload.**

Not true. The on-demand, pay-per-use public cloud will have a place in nearly every company's IT future. But organizations that assume public cloud is always the lowest cost deployment option will end up spending more than necessary. In fact, operating costs vary based on workload requirements for capacity, performance, security, and other factors. Steady-state production workloads can incur lower total costs when run on efficient, next-generation infrastructure in the premises-based data center than in the public cloud, where users have little visibility or control into the infrastructure. Instead of making assumptions, IT organizations should calculate and compare costs for optimal workload delivery across a range of deployment options and environments, including premises-based and hosted; public, private, and hybrid; physical and virtual, commercial and homegrown.

- When speaking with your CFO colleagues, calculate and present costs to run a workload, over time, in various environments and deployment models.

### **Myth #6: Public cloud eliminates management and administrative costs.**

Not true. Many IT organizations that moved workloads to the public cloud, with the expectation of reducing labor costs, are experiencing “sticker shock.” Fully 61% of IT decision makers surveyed by Frost & Sullivan estimate that for every \$1 they spend on cloud infrastructure as a service (IaaS), they spend more than \$3 to manage the service.<sup>4</sup> Third-party cloud services require more time, talent, and funding than many organizations have budgeted, on top of the burden of simultaneously managing disparate premises-based infrastructure. In your assessment, be sure to include the full management burden associated with public cloud deployments, in comparison with infrastructure solutions that minimize management effort (and costs) across hybrid IT environments.

- When speaking with your CFO colleagues, be sure to discuss flexible deployment of IT staff to maintain an optimal infrastructure.

<sup>3</sup> 2015 Frost & Sullivan Cloud User Survey

<sup>4</sup> Ibid.

## FRAMING THE DISCUSSION ABOUT IT INVESTMENTS: THREE BASIC TENETS

In most enterprises, leaders from every organization agree that transforming to a digital business is critical for success—and even for survival. Among businesses surveyed by Frost & Sullivan, 64% say that their transformation strategy is essential to remaining competitive in their industries.<sup>5</sup> But that doesn't mean the CFO organization is as attuned to the IT vision and roadmap as is the IT team. To be sure you're on the same page, it's worth starting your conversation with these three basics.

### **First: Change is a constant.**

Today, IT leaders are adapting their processes to reflect dramatic shifts in technology usage and decision-making driven by the cloud; most particularly, the ability and desire of Line of Business users to select and deploy business apps without the involvement of IT. In a 2014 Frost & Sullivan survey, 26% of LoB decision makers said that as much or more of their department's IT spend came from their own budget as from the corporate IT budget.<sup>6</sup> That number was expected to increase to 33% by 2016. To ensure that IT remains responsive to LoB needs, while protecting the business, IT leaders should focus on building flexibility into infrastructure and processes. The new goal is to implement a framework that will support continued change, as new technologies are developed, new business models disrupt the market, and new revenue streams are explored. That means implementing an infrastructure that is designed to be adaptable.

### **Second: Hybrid is a way of life.**

There is no single, optimal solution for all workloads—"optimal" is contextual and dynamic. Expect to use a combination of public and private cloud; physical, virtual, and containerized servers; third-party-managed and self-managed services; Infrastructure as a Service, Platform as a Service, and Software as a Service. The goal is to enable a broad hybrid environment that supports multiple infrastructures without requiring labor-intensive custom effort for integration and management. Ensure you have a foundation that is designed to enable each investment to "play well with others."



In a digital world, IT is part of what you MUST "do best."



### **Third: The enterprise must retain control over IT resources—regardless of deployment model or environment.**

In a digital world, no matter what industry you are in, technology is embedded into your business. Regardless of the number or type of partners you work with, your own enterprise remains accountable for regulatory compliance, data security, and application performance. Don't be seduced by vendors' arguments to outsource vital IT functions so you can "concentrate on what your business does best." In a digital world, IT is part of what you *must* "do best." This reality means that, regardless of the infrastructure model (hosted or premises-based or

<sup>5</sup> 2015 Frost & Sullivan Cloud User Survey

<sup>6</sup> 2014 Frost & Sullivan Cloud User Survey

hybrid), you need to retain full control over how your applications perform, how your data is stored, how your infrastructure keeps pace with your business decisions, and more.

With agreement on these three basic tenets as a backdrop, leaders in the CIO and CFO organizations are well-positioned to begin an in-depth assessment of the financial impact of various infrastructure options.

## ASSESSING COSTS AND NET VALUE FOR VARIOUS IT INFRASTRUCTURE OPTIONS

Conducting a thorough economic analysis of IT infrastructure options is not a simple task—but it is a necessary task. CIO and CFO decision makers must understand the impact of their investment decisions, not just at time of purchase but throughout the lifespan, if they are to fulfill their roles as enablers for business success.

The most effective way to begin the assessment is to look at each potential investment from two perspectives:

- **Total cost:** This view considers all capital and operating expenses for procuring, installing, and managing the solution (hardware, platform, software) over time. It includes labor costs (based on time) for ongoing maintenance, management, and optimization—including any system changes required to support new workloads. Given the goal of creating a dynamic, adaptable environment, this calculation should also play out “what if” scenarios for scaling applications and storage, changes in business needs, availability of new technologies, and so forth.
- **Net business value:** This perspective considers each solution’s relative impact (positive or negative) on business goals—for example, customer retention, employee productivity, and revenue. Different infrastructure technologies and products deliver different and measurable levels of performance, speed, and availability. Such parameters can measurably affect application performance and business agility—that is, the company’s ability to respond quickly to market conditions and competitive activities. The effect of such factors must be considered alongside top-line costs, to provide a complete assessment.

“Cost” and “value” assessments can apply to many purchase decisions. One relatable example is from the restaurant industry. The head chef may have a budget that covers food supplies, kitchen labor to prepare the meals, equipment and operating costs (e.g., power to run the equipment). He or she also may have a value objective based on the restaurant’s brand identity—for example, to deliver fresh, farm-to-table fare. Furthermore, the “value” component must also address the food’s appeal to a wide range of diners, to ensure tables are filled and the restaurant is a success. In preparing the menu, the chef needs to consider which options will deliver maximum appeal, while requiring minimal direct costs (for food and supplies) and indirect costs (for storage and cooking). The optimal result is not the cheapest option (e.g., serving only kale when it’s in season), but the one that offers diners maximum appeal value for the cost.

A similar approach should apply to data center infrastructure assessments.

To help you get started on your assessment, the following sections present some elements that may be included in a thorough comparative cost and value comparison. For our example, we look at three of the many infrastructure options available to enterprises:

- **Traditional IT:** With this option, the enterprise maintains its existing infrastructure, updating and adding equipment and applications as needed.

- **Public cloud:** This increasingly popular option allows the enterprise to outsource infrastructure procurement and maintenance to a third-party cloud service provider.
- **Composable Infrastructure:** A new architectural approach that is built using fluid pools of resources (compute, storage, network fabric), a unified Application Programming Interface (API), and software-defined intelligence for a fully programmable data center infrastructure.

## TOP-LINE COST ELEMENTS FOR THREE INFRASTRUCTURE OPTIONS

When assessing various infrastructure options, many businesses focus the cost comparisons on direct, out-of-pocket expenses—the fees paid to third-party vendors and/or service providers. They mistakenly assume that all other carrying costs are roughly equivalent across the options (a common misperception regarding software licenses), or at least are not significant enough to warrant sharpening the pencil (a popular but incorrect assumption regarding labor costs for implementation and management). In fact, such costs can vary widely based on the type of infrastructure solution and vendor, and can make a big difference in the overall business value of a solution.

The following table shows examples of cost elements for you to include in your infrastructure assessment:

Cost Component	Traditional IT	Public Cloud	Composable Infrastructure
<b>Compute/storage capacity</b>	Upfront capital investment for physical servers to support anticipated peak capacity usage (usually overprovisioned for spare capacity)	Pay-per-use hourly or monthly charges or subscription-based upfront charges per a committed capacity. Runtime costs may be extremely high for steady-state workloads	Upfront capital investment in flexible infrastructure (high resource utilization without overprovisioning). Pay-as-you-grow consumption models
<b>Software licenses &amp; maintenance</b>	Hardware based. When resources are underutilized, may pay for more software licenses than needed	Generally per virtual machine or core, depending on provider	Hardware based – efficient resource usage keeps software license costs in check
<b>Hardware provisioning (labor)</b>	Custom provisioning; integration & test; requires system-specific expertise	Included	Infrastructure as Code, software-based automation
<b>Hardware maintenance (labor)</b>	Multiple vendors' maintenance contracts; requires system-specific expertise	Included	Automated, frictionless updates
<b>Business continuity/disaster recovery</b>	Requires a duplicate data center infrastructure	Requires duplicate deployments or additional service upgrades	Fluid pool of resources minimizes the amount of redundancy required
<b>Application deployment (labor)</b>	Manual, difficult to fit into DevOps framework, requires custom testing	Challenging, usually requires 3 <sup>rd</sup> party assistance	Simplified, automated, ideal for DevOps framework, and is supported by Unified API
<b>Application scaling (labor)</b>	Manual, requires overprovisioning or time-consuming add-ons	Requires monitoring and manual deployment of new instances	Automated scaling
<b>Hybrid (split application) deployment support</b>	Manual, usually at physical layer only	Limited support; may require custom APIs	Simple, via Unified API and broad orchestration ecosystem support
<b>Monitoring and management</b>	Multiple monitoring platforms	Complex and costly: Businesses spend three times as much on managing their cloud services as they do on the services themselves. <sup>7</sup>	Single, intelligent interface for all of the infrastructure

Source: Stratecast

<sup>7</sup> 2015 Frost & Sullivan Cloud User Survey

## ASSESSING BUSINESS VALUE OF THREE INFRASTRUCTURE OPTIONS

As noted, top-line costs are neither the only, nor even most important, aspect of IT investments. Depending on your business priorities and operations, achieving any or all of the following goals can be impacted by your choice of infrastructure. Consider the following examples:

Business Goal	Infrastructure Impact	Traditional IT	Public Cloud	Composable Infrastructure
<b>Increase speed to market – Respond quickly to market and competitive conditions</b>	Speed to provision and change infrastructure and applications as needed. Implement continuous integration and deployment (DevOps)	Slow, manual – difficult to reconcile with DevOps	Dependent on vendor capability/service level agreement	Fast, automated – flexible consumption model delivers capacity ahead of demand; easy to integrate with DevOps
<b>Improve productivity – Enable employees to work faster and get more done</b>	Increased uptime, reduced latency	Apps and BCDR must be manually provisioned and tested based on workload needs; software and hardware updates cause disruption and retest	Limited control; app performance is inconsistent based on other companies' workloads and contention for resources	Easy to configure and adjust infrastructure resources to support whatever performance levels are needed by the app; BCDR is easier to implement
<b>Increase revenue</b>	E-commerce transactions must be fast, secure, with access to complete catalog and omni-channel communications	Manual integration of multiple components and apps (e.g., Web app, database, PCI credit handling, contact center); inconsistent performance with traffic fluctuation	May be difficult to integrate cloud and traditional components; manual scaling	Easy integration with traditional, cloud, and commercial apps via Unified API; can be configured for consistent, fast performance
<b>Improve customer experience</b>	Feature-rich customer self-service portal; omni-channel communications; social business	Requires manual provisioning and management of disparate apps; custom integration; long lead time for changes	Fast to deploy apps; cloud provider may not support integration of components; latency may impact performance of hybrid workloads	Fast to deploy and update apps; integration with other apps via Unified API
<b>Secure proprietary and customer data</b>	Primary and backup data must be protected	Custom, manual effort required by enterprise	Limited control over access to shared infrastructure	Full control of infrastructure simplifies regulatory, security, and compliance elements
<b>Comply with regional data-handling requirements</b>	Data must meet sovereignty and compliance regulations, worldwide	Full control over data center locations and handling	Some control over data center locations and handling	Full control over data center locations and handling

Source: *Stratecast*



## PUTTING IT ALL TOGETHER

Understanding the strengths and challenges posed by each type of infrastructure in meeting your business goals can help you build a business case that both the IT and the finance organizations can support. Identify your primary business goals, and calculate the dollar value contributed by each infrastructure type.

Following are examples of business goals, and how your infrastructure choice can impact their attainment.

### Improve speed to market

“Speed to market” goals usually are about streamlining business processes to gain an advantage. Speed to market can result in greater revenue (for example, when a supermarket is quick to capitalize on a growing trend for gluten-free or organic food); it can deflect loss of revenue to a competitor (as when a bank matches its competitor’s lower interest rates); or it can protect the business by enabling a rapid “fix” when a product launch reveals unintended consequences. For example: for many companies, reducing the software development and delivery pipeline via frameworks such as DevOps is an important step. DevOps supports continuous test, integration, and delivery of software in a collaborative work environment that includes representatives from business, operations, development, and other teams. Because DevOps relies on automation, integration, and standardization, the underlying infrastructure can make a difference in how DevOps is implemented, and how much value the business derives from the implementation.

To quantify “speed to market” in your business case, consider the incremental value associated with moving more quickly. If your product or promotion launches a week earlier, what revenue gains do you anticipate? How much revenue will you protect if you thwart your competitors’ attempt to undersell you? If you quickly isolate and fix a bug in your software—before it generates wide-scale public condemnation—how much have you saved in damage to your reputation, and even fines?

### Increase business agility

The fast paced global economy is spurring many businesses to strive to improve their agility, or the ability to quickly change direction based on market or competitive conditions. A hallmark of an agile company is that such shifts in direction do not require an all-out effort that disrupts business operations, but instead are facilitated through automated business processes. The ways that “agility” is manifested and measured vary from industry to industry, and company to company. For example: using analytics tools, a national retailer may discover store-specific buying patterns that are tied to very local events, such as weather, school calendars, even sports team records. This requires a hybrid IT environment that integrates a broad range of custom and commercial applications, both company-managed and partner-managed, hosted in multiple environments—branch store locations, in the company data center, and the cloud. Applications include point-of-sale systems, inventory and analytics, supply chain systems, store-customizable calendars, commercial weather services, and more. Such a complex configuration requires infrastructure components that are integrated with a highly automated, flexible, intelligent orchestration platform with a unified API.

To translate agility into dollars, consider how such an optimized system can benefit the business. In the example, the business can predict how much sales revenue will increase because local customer demand can be predicted more precisely. In addition, the company can determine how much inventory costs will decrease, thanks to the

utilization of just-in-time supply chain systems. The retailer can also estimate savings associated with changing and adding functionality (design, development, configuration, testing, and deployment) and for local IT administrative support.

### **Increase revenue**

If your business has an online sales channel, you probably have an accurate measure of revenue that comes in over your website. You may even map system maintenance and other outages against revenue, so you are able to predict how much each outage will impact you. But have you analyzed website visits to determine how they impact revenue? If so, you may be aware that the longer it takes a page to load, and the slower the system response time to visitor input, the more likely the user will leave your site and perhaps move to a competitor. In fact, an Aberdeen Group study found that “a one-second delay in page load time equals 11% fewer page views, a 16% decrease in customer satisfaction, and 7% loss in conversions.”

Of course, page loads are affected by more than the infrastructure: Web design, networks, even access devices play a role. But processing speed and storage performance can play an important role as well. In your own business case, use analytics to determine how latency in e-commerce applications can impact revenue. Calculate the response times delivered by various infrastructure options, and determine the value of the impact on visits and revenue.<sup>8</sup>

## **THE LAST WORD**

Businesses have never had more technology options from which to choose. Nor have their choices ever had a greater stake in the success of the business. This change is why it is necessary for IT leaders and their finance counterparts to look beyond top-line costs, and understand all the costs and benefits associated with each choice.

The IT and finance organizations share a commitment to ensuring that every investment provides maximum value to the business. They just need to be sure they’re “talking the same language,” as they hold constructive conversations about how infrastructure decisions impact attainment of strategic business goals. With a shared understanding, the leaders are well-poised to make optimal decisions.

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**For information about Composable Infrastructure  
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<sup>8</sup> Aberdeen Group, *The Performance of Web Applications: Customers are Won or Lost in One Second*, May 4, 2015

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