



In Search of — Utility Computing

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Management Summary

Like an Indiana Jones' plot, **the hunt is on to find the utility data center, where demand-driven enterprises meet their internal and external business processing and information servicing needs from an ever-adapting, yet singular, point of control.** The problem is that you might not know it, if you find it, and you don't even know whether you should be out looking for this mythical pot of gold at the end of the rainbow.

So our search begins by trying to define the utility data center. It is ethereal because it is a way of thinking and a management approach long before you begin to classify it in technical terms. That is why the leading IT vendors' ramblings may seem so hard to grasp. Each is staking a position that begins with their perceived strengths, with the definitions evolving from that central point. Let's try to define this in enterprise terms and not vendor terms.

This is all about the infrastructure, mostly the IT infrastructure, that an enterprise deploys to meet its operational and strategic objectives. It all begins with a difficult question: *How should we meet these needs, going forward?* This is a question in the future tense, because too often we decide where we want to go with respect to where we are today. Of course, we cannot ignore the realities of where we start on our journey to the future, but that should be secondary.

Enterprise executives need to answer this question. There are four general issues for them to consider:

1. *Do they believe in centralization of core business operations, whether for business effectiveness or operational efficiency?*
2. *Do they believe that business organizations should pay for the costs of doing business, or is it an overhead item?*
3. *Do they believe that their IT infrastructure organization(s) can supply infrastructure less expensively or more speedily than an outside party?*
4. *Do they believe that the infrastructure can provide an enduring competitive advantage to their enterprise?*

Each will be discussed on the way to defining the essential characteristics of the utility data center. Read on; the adventure begins.

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Beginning the Search

Before you trek off on your search, you need to prepare. Below are some critical factors to consider.

Centralization

Is centralization a key guiding concept of the enterprise or large operating unit¹? Are a number of key organizational functions centralized, like finance, accounting, human resources, facilities planning and management, and, maybe, marketing and sales?

Most enterprises have some centralized functions. Why? Because they are too ineffective to operate in a truly distributed, independent manner and/or too costly to manage. There may be staff with dotted line responsibilities to organization divisions or departments, e.g., each department may have someone in charge of finance and accounting, but all of the accounting usually rolls up into a centralized accounting system.

If you accept that some organizational functions should be centralized, then the next question is *whether the providers of IT infrastructure should be centralized?* (Back to this is a minute.)

Paying for Services

Few enterprises would have the cost of divisional or departmental travel charged to a general overhead account and shared, possibly, among all of the organization units by allocation or formula. It is an accepted practice that each pay for its employees' business-related travel expenses. *So why should IT infrastructure be any different?*

If an organization unit buys its own IT equipment, it is usually responsible for paying for it out of its own budget, and for supporting it with its own staff. With ownership, comes economic responsibility.

¹ In this bulletin, we are going to refer to the *whole enterprise* as the *operating unit*, as it is in many enterprises. Some very large enterprises, especially conglomerates, may have a number of independent operating units, typically segregated from others because of dissimilarities of the underlying business operations, or for legal reasons.

Somehow, when someone else buys the equipment and supports it, this becomes an overhead item for many enterprises. If the costs and focus of IT infrastructure is moving from assets to services, *shouldn't the costs be borne by those using or deploying the services?*

Outsourcing

If the data services can be reduced to an algorithmic formula, and those using the services pay for use according to the formula, does the enterprise need to do this themselves, or should outsourcing (of some sort) be considered? What difference does it make whether the infrastructure is provided internally or externally?

These are very difficult questions crossing technical, financial and organization boundaries. Internal technical competence may provide a strategic advantage to an enterprise. Doing IT infrastructure internally may provide a cost advantage. Information processing may be so specialized that one division's requirements may be unlike that of any other divisions.

There are many very legitimate reasons not to outsource. *Do you have good reasons not to outsource?*

Competitive Advantage

For the last two decades, much IT investment has been made in search a competitive advantage, such as greater customer knowledge, more capable order processing, and lower operating costs per transaction. Clearly some businesses have leveraged their IT investments into a sustainable competitive advantage, e.g., eBay, Amazon, ... They could not have achieved their dominance without their IT delivery systems. The time to market with a new idea was critical to them.

However, this is not true in many cases, where IT infrastructure provides, at best, competitive equivalence.² Trying

² Competitive equivalence means that an enterprise has infrastructure that is about the same as its competition, neither much more nor much less. Neither has an advantage of greater effectiveness nor better efficiency. To

to achieve a *durable competitive advantage*³ - a sustainable, noticeable marginal advantage over competitive equivalence - through information technology has been the justification for sizable investments, but lousy returns. *An important question is whether your enterprise is seeking a competitive advantage through IT?*

For a moment, assume that the answer is *yes*. *From where does the advantage come? Is it infrastructure (the underlying hardware, middleware, and networks) or is it from custom or customized applications?* If the infrastructure provides an advantage, it is probably a cost advantage or, maybe, an availability of resources advantage. But most likely the advantage comes from custom or customized software.

Every enterprise needs some combination of ERM, CRM, HR, and accounting software. *Do these applications, without significant customization, provide a competitive advantage?* Not likely; they are a baseline investment.

Accepting The Realization

If IT infrastructure does not provide a durable competitive advantage, then you really don't care from where (or whom) you get it, as long as it is delivered to the necessary qualities of service, including security. If you have to pay for it, then you are also concerned about the costs and formulas. **What you need is a utility-like organization to provide your infrastructure, because there is no reason for you to do it yourself.** Utility computing can be an in-house function or from an external party⁴, or a combination of both.

Many of you may be conjuring up images of seemingly incompetent, monopolistic phone, cable or electric service providers. Be careful, here. Most, in fact

have less would be a competitive disadvantage, which could be harmful. More on this in an upcoming bulletin.

³ Durable means at least 6 months, and hopefully more than a year. Otherwise the advantage is not sustainable and your competition can quickly copy your practices and systems.

⁴ Commonly called *outsourcing*.

almost all of the time, they are meeting the service delivery requirements of all their customers. What we find lacking is their sense of timeliness to respond to changing needs and their upper-handed ability to set prices and levels of service. In a truly competitive situation, these deficiencies would drive customers away to other providers, but unfortunately in certain monopolistic settings, there is no competition.

This is not the case with IT infrastructure. There is plenty of competition from internal IT organizations to external providers. They all want your business and they want to keep you happy, else you will move to another supplier when your contract ends.⁵ So the utility concept is a meaningful one, especially for the generic infrastructure that constitutes much of enterprise IT investment today.

Utility Thinking

If the concept of a utility is now a more understood and comfortable subject, you need to translate this into actionable items for your enterprise.

1. *What parts of your IT infrastructure provide a sustainable competitive advantage?* That which does not is subject to utility procurement.
2. *Does your enterprise charge departments and divisions for IT infrastructure resources and services?* Accountability is critical to managing costs. If the organizations are not held accountable for their consumption, then there is little hope for cost containment.
3. *Have you centralized IT infrastructure delivery and management?* Consolidation has been happening for a decade. If you haven't taken a close look at the advantages of

⁵ This is easier for IT infrastructure than for less open and less portable infrastructure like water and gas pipelines or electrical or telephone lines. IT infrastructure is continually evolving and replacing itself with more functional and/or less costly upgrades.

consolidated procurement, management and operations, you should.

4. *If you have centralized IT infrastructure management and delivery, how does it compare, on a service quality and cost basis, with what you can procure outside of your enterprise? If you don't know, then you are not leveraging the situation.*

Defining Your Utility Profile

Now that you have a basis for further consideration, you need to define what you want from a utility, either internal or external. This needs to be done in your own terms, because the major infrastructure vendors and providers have all adopted their own vocabulary and phraseology. There are some key components:

- **The nature of your infrastructure.** *Is it heterogeneous or homogeneous, in terms of servers and operating environments? Is it largely centralized?*
- **The nature of your business.** *Is it well defined or rapidly changing?*
- **The nature of your resources?** *Are you well endowed with capable IT folks, maybe already operating in a utility-like function?*
- **The nature of your problems.** *What needs fixing or change – especially in the short term?*
- **The nature of your challenge.** *Are your divisions and departments already paying for infrastructure use, or will this idea be a shock to their budgetary thinking?*

This is not an easy exercise, and has been simplified here to get you to think about the utility propositions and pitches that you can expect at multiple levels of your enterprise.

Conclusion

It is reasonable and prudent to contemplate a utility approach to satisfying your IT infrastructure needs. You should do this in the next 18 months, sooner if cost pressures

are great.

Pay close attention to your situation and stated requirements and try to map them into the many approaches proposed by the leading infrastructure vendors and providers, under a confusing and overlapping set of names, concepts and offerings.

Utility thinking should be part of your IT plans. Whether, and how, to proceed will be determined by your enterprise's business requirements and existing vehicles for infrastructure provisioning and delivery.



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