Top 5 Data Center Issues for the Enterprise IT Executive

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A quick perusal of a typical contemporary IT project portfolio will show a strong representation of projects dependent upon, or directly related to the data center.¬† Changes in the growth and scale of data processing, applications, content storage, data communications, risk, compliance, and maturity of IT governance are all in some way connected to the data center facility and operational framework supporting the IT environment.

We collected data from the field and from discussions with enterprise leaders, to examine the breadth of issues involving the data center that are causing the IT executive to lose sleep. ¬†¬†While there were a multitude of issues revealed, and articulated from several perspectives, we consolidated the information into five categories and share those with you here.

GROWTH AND EXPANSION

Growth of the IT data processing environment is a multidimensional subject influenced by the business type (transactional, international, vertical focused, etc.), end customer behavior, data processing and storage, regulatory demands, risk management, and technology refresh (just to name a few).¬† ¬†Because of developments such as increased processing power, virtualization, new server technology, and requirements for low latency data connectivity, the contemporary data center has become a dynamic environment which must constantly be re calibrated to maintain its effectiveness.¬† ¬†Even when the growth of the business is flat, the IT footprint can scale positively because of increasing silicon density in contemporary IT equipment as well as governance and compliance factors such as data retention requirements.¬† Within the walls of the data center, these issues map into the three dimensions of data center capacity- space, power, and cooling.

Those handed the task of supporting this growth are faced with the timeless question, "How can I get more out of what I have?"¬† Those constrained by space in the data center often turn to virtualization to reduce server count.¬† Aside from the complexities of new virtualization initiatives, the end result is sometimes that server count is indeed reduced, but cooling problems emerge because of higher server utilization levels.¬† Space-constrained server consolidation can result in non-uniformities of power consumption, resulting in hot spots within the data center.

When wrestling with cooling problems, whether hot spots or over heating in general, other problems are often revealed that contribute to the cooling issues.¬† In particular, inadequate height of the raised access floor serving as a cool air plenum, or access floors that have been crammed full of cables are common.¬† These problems usually do not have a solution, as floor modifications imply something just short of a total rebuild of the facility.¬† If the under-floor space is clogged with cables it's often because of years of poor operational practices, the correction of which exposes the risk of application outages (if the cabling installation is a mess then it's likely that one cannot accurately identify which servers are connected by which cables).

Next the question, "If we can't live within the space we have, why not build more space or build a new data center altogether?"¬† Indeed, this option is commonly considered by the executive team… that is until the true capital costs are estimated.¬† The fact of the matter is that the decision to expand or undertake greenfield or brownfield construction projects require huge capital commitments and tough business decisions.

It is worth mentioning too, that growth, as defined by the word itself is a continuum.¬† Especially in the world of information technology, growth is difficult to specify more than a few years into the future because of technology changes, end user changes, and business changes.¬† The magnitude of capital investment in data center facilities requires balancing with a long-term plan for how the benefits of that investment are realized.

CONTROLLING COSTS

Because of steeply rising operating expenses (largely driven by utility fees) associated with data center operation,¬† a trend has emerged in the industry to move the financial responsibility of data center operation from the facilities department to the IT budget.¬† For many an IT executive, this

has been like discovering a monster in the bedroom closet, and has touched off a new quest for cost savings.

Virtualization for server consolidation, if not already undertaken at this point, is one way that organizations hope to achieve savings in the data center.¬† Industry feedback has shown that success in this regard is somewhere between 10% and 50% of what was initially promised.¬† That's not too bad and we'll take that in a pinch, but this may be only a small fraction of the data center's operating expense.

Many firms look toward Green initiatives such as free air cooling and alternative energy sources.¬† Many Green techniques require modification to the building or are dependent on certain environmental characteristics that are not always available at a given location.¬† The result is that such techniques are either not possible or not sufficiently impactful for a given data center, in spite of the noble benefits that these commitments yield.¬† It's true that there is a lot of low hanging fruit in low-tech techniques such as sealing cable openings in the access floor, installation of blanking panels, and so on, but in an enterprise data center that is small compared to broader industry standards, these gains may not be large enough to carry the day.

GOVERNANCE

Governance portends good management and operation of the data center as a business asset to the firm.¬† It is inclusive of the operational framework exercised in the data center, the financial stewardship of the facility, and its alignment and role in support of the IT assets of the business.

Perhaps top of mind in the governance area is the notion of how to undo all those years of bad habits.¬† Problems including access floors being clogged with cables, lack of labeling standards, inconsistent racking of equipment, inconsistent placement of cabinets on the floor, poor airflow management, and a host of other problems result from operational procedures run amuck.¬† ¬†Governance of the data center, and subsequently the IT environment, cannot proceed successfully as long as these issues continue.

Consolidation projects are cited as a key, top of mind, issue in IT governance and transformation.¬† Consolidation of remote data centers and server closets into a well managed core data center is a

complex task when the IT environment is well governed.¬† It is done with very high risk in poorly managed environments.¬† Central to the success of a consolidation project is asset management.¬† Before an environment can be relocated, one must understand what we have, how many we have, and where they're located.¬† Implementation of a strong asset management framework is important for successful consolidation as well as good governance in the long term.

RISK MANAGEMENT AND SECURITY

Here we group a number of top-of-mind topics, though they are sometimes mentioned as top issues singularly, as if not related to risk management.¬† In the vanguard of these are security, compliance, Business Continuity and Disaster Recover (BC/DR), and uptime and availability aligned with the dynamics of the business.

It is important to mention that Availability, is one leg of the security triad (along with Confidentiality and Integrity).¬† Security then, as a discipline and as a service, is fundamental to the entire risk management profile and an enabler for uptime, BC/DR, and compliance.¬† It is surprising, in this context, the feeble state of data center security in many enterprise facilities.¬† From physical access security and exposure to environmental threats to lack of discipline in operational procedures, Availability exposures are in abundance.

The adage, "time is money" is at the heart of the interest in high availability.¬† The cost of downtime is evident in lost transactions and dead-air for the business, but can also project into penalties for falling out of compliance.¬† This is a very complex set of issues that require extremely thorough analysis, planning, and rigor to properly manage.¬† Few enterprises make the investment in these areas that are duly warranted by the business.

A popular trend is for the enterprise to look to the data center tier models for guidance in deciding the levels of redundancy necessary to achieve the right level of site Availability (uptime) aligned with the business model.¬† This is often a dead-end street, though many miles are traveled to reach the end point.¬† The focus on tier levels for availability is often an unfortunate distraction for the enterprise for several reasons.¬† First, the cost to build the levels of infrastructure redundancy dictated by the higher tier models is a death knell for many enterprise construction projects.¬† Secondly, availability through infrastructure redundancy has to be balanced against energy

efficiency,... ¬†especially where the interests of the enterprise are concerned.¬† When infrastructure components are operated in redundant configurations for higher availability, those components are operated at a lower level of utilization (because the redundant components are sharing the load).¬† Most data center infrastructure components have operating characteristics that require high loading levels in order to achieve reasonable efficiency.¬† In other words, redundancy burns energy that is not spent on real work.

A third point about tier models is that some of the popular models, like the Uptime Institute's Data Center Tier Model, focuses on infrastructure topology but largely does not consider the quality of facility operations in managing that infrastructure.¬† There are lots of data centers that would qualify no higher than Tier-1 that have demonstrated uptime equal to Tier-4 standards over a defined period of time.¬† This is due, in part, to the quality of operational processes, procedures, and staff managing and operating those sites.

RESISTANCE TO CHANGE

Consolidation projects, operational maturity, and IT transformation necessarily imply change.¬† The multiple faces of change are the nemesis of the IT executive striving to improve the status quo.¬† Resistance can come in the form of project budget limitations.¬† Ironically, being fortunate enough to not have experienced a data center outage can often make it more difficult to win funding to implement change.

Resistance can also come from the rank and file of one's own IT department.¬† Consolidation projects are far reaching in scope, and thus run an even higher risk of ruffling feathers.¬† Resistance can come from the "server huggers," who feel a strong sense of security by having the server box itself within arm's reach.¬† Resistance can come from the application owners who may be very wary of the unknown.¬† The impact of infrastructure transformation is sometimes not precisely quantifiable, and the risk of the unknown is challenging to sell.

Not to be overlooked is the social friction that comes from organizational change.¬† Relocation or reorientation of the corporate data center will naturally impact organizational boundaries and scopes of roles in the organization.¬† Organizational change management must be carefully managed and should not be underestimated in its potential to derail a strategic business initiative.

OUTSOURCING AS A REMEDY

While there are businesses for whom owning and operating an enterprise data center makes good sense, many firms have come to the conclusion that data center outsourcing is a compelling and competitive alternative to owning and operating that serves the business well.¬† Indeed recent industry surveys have confirmed that over 80% of America's fastest growing companies have turned to outsourcing for one or more of their IT services.¬† Indeed it is commonplace today for companies to outsource key IT services, and outsourcing of the data center itself has proven to be especially beneficial.

Financial services firms have been leaders in data center outsourcing to colocation providers, and have benefited from the strategic advantages provided by ecosystems emerging in colocation provider facilities.¬† These advantages include not only close proximity to key financial markets (such as New York, Toronto, and Chicago), but also the benefits of proximity to trading platforms, quant engines, exchanges, and so on that reside within the very same colocation facility building.

The "make versus buy" decision, in the context of data center facilities, is a decision that is increasingly obsolete.¬† Firms that opt to "do it themselves" embark on a risky and expensive path.¬† Putting aside the magnitude of capital investment necessary, the building of a contemporary enterprise data center requires expertise in real estate, mission critical facilities planning, architecture, construction, and facilities operations, to name a few.¬† How many businesses have ready access to such expertise on a long-term basis?¬† In today's world, the "do it yourself" data center path is one of steeply declining efficiencies.

Companies that are challenged by risk management and lack of maturity of operational and change management processes indeed can benefit from the economies of skills as well as economies of scale that data center colocation providers bring to the table.¬† In particular, facilities management and engineering are typically outside of the core business of many firms, and a tremendous resource drain to do well or to do at all.¬† Better that a company whose core business is mission critical facilities management do the job for you.

Not to be overlooked is the impact of regulatory compliance on the data center facility.¬† Requirements handed down from Sarbanes Oxley, Graham Leach Bliley, HIPAA, PCI, and the rest do

have impact on the capabilities of a firm's data center facility.¬† Compliance can be costly and complex to maintain.¬† Outsourcing to a facility that meets the requirements of these regulations can offload a significant area of concern.

Outsourcing of the data center to a qualified colocation partner can yield broad and multi-dimensional benefits to the enterprise.¬† Colocation providers focus their entire business on delivering world-class, high availability facilities wrapped with mature operational processes.¬† The colocation provider has invested in the real estate, mission critical infrastructure, and skilled staff to support all types of data processing architectures.¬†¬† This comes with the added benefit of security systems and operational processes to fold into the enterprise risk management and compliance plans.¬† The colocation provider delivers the competency in mission critical facilities, allowing the enterprise to focus resources more effectively on the core business.