DATA CENTER BUILD VS. BUY

IRON MOUNTAIN®
DATA CENTERS

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EXECUTIVE SUMMARY

Today, organizations are more reliant than ever on technology to drive business imperatives and opportunities. IT departments must deploy modern infrastructure that supports critical initiatives such as cloud computing, big data, mobility, collaboration tools and social media. However, in many cases, IT leaders are recognizing that existing data centers may not be suitable for this new era in IT.

Technology is changing rapidly and aging data centers have a difficult time dealing with the demands of today's IT environments in terms of capacity, security, scalability, agility, compliance, redundancy, costs, and power/ cooling. What's more, management platforms such as software-defined and converged models are pressing IT leaders to re-evaluate how they deploy data centers.

For many organizations, when it comes to data centers the time to act is now. However, new data center construction is risky. Building is expensive and time consuming at a time when IT needs to move quickly and stay within tight budget constraints. In the face of these changes, organizations are also presented the opportunity to put in place a new foundation that will scale properly to meet strong demand and address today's rigorous requirements. What should that foundation look like? Does it make sense to build new data centers, expand existing ones, outsource to a colocation provider, or use a combination of approaches?

There are cases to be made for building and buying ("leasing"). Leasing a data center provides an attractive opex model, the ability to quickly scale up and down, access to the provider's space and power, and staffing for 24-hour security and support. However, many enterprises are still deploying internal data centers because of concerns around security and compliance. Plus, building can provide more control.

WHAT TO DO?
In this white paper, you can examine the critical factors that go into the "build vs. buy" decision for data centers and explore why today's challenges and opportunities are causing a clear shift toward the "buy" side of the equation.

04 | # DEFINING THE CHALLENGES

To say that technology is evolving at a rapid pace is to understate the obvious. IT services can now be consumed accross the globe via any connected device thanks to near-ubiquitous and reliable high-speed Internet connectivity and cloud computing. Businesses also reap the benefit of changing technology with advancements in analytics for improved insights used to drive customer satisfaction, efficiency and sustained success.

To be successful, organizations of all types and sizes must keep up with these changes, which means their underlying data center infrastructure must keep up as well.

Unfortunately, significant obstacles must be overcome to ensure data centers are capable of handling today's challenges – not to mention the impending road blocks on the horizon. The need to make changes in the data center is critical to success and growth. Still, upgrading/changing the data center is difficult and risky, which is why many organizations have fallen behind and fear taking corrective action. According to a report by IDC®, the average age of a data center in the United States is 12 years. As the research firm noted: The typical data center was built to support a substantially smaller number of servers that required far less power and cooling, rack space, and cabling. IDC expects that for the next several years, there will be a considerable investment in data center "makeover", not just in data center systems and technologies, but the actual facility itself in terms of design, construction, operations, staffing strategy, and processes.[1]

The challenges in upgrading and modernizing the data center are not just in understanding which technology to use. Organizations are also challenged by flat budgets, declining headcounts, exacting compliance requirements, and a myriad of choices in assessing what is the best approach to take for data center design and deployment.

[1] The Benefits of Data Center Transformation with HP, Tech Republic

10 SITUATIONS TO CONSIDER COLOCATION OVER DATA CENTER CONSTRUCTION

1   Data center consolidation initiative - reduce data center / hardware sprawl from mergers and acquisition

2   Replace end-of-life / legacy infrastructure - stop wasted spend, negative environmental impact, downtime

3   Update Inefficient data center design / cost model - increase cost efficiency, reduce infrastructure load

4   Address dramatic data growth - structured and unstructured - impacting hardware capacity

5   Increased virtualization driving difficult-to-maintain data center power density requirements

6   Strong / unexpected growth in corporate-controlled devices, connected objects, users and applications

7   The need to support new cloud initiatives and resource-intensive use cases such as big data / analytics

8   Address exacting compliance / eDiscovery requirements that mandate long-term data retention, storage

9   Drive customer satisfaction with improved data center / network uptime, even during a natural disaster

10   Address unnecessary complexity in managing, scaling data centers

GETTING STARTED

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When deciding whether to build, buy or both, it is important to understand all of the available options as well as gain a comprehensive understanding of the current and desired data center landscape. Assess potential business challenges, road blocks and available resources such as budget, staffing, equipment, network capabilities, space, power, cooling, and long-term operational expenses.

Step one: assessing all available options. This seems to be a relatively simple choice between building new data centers, expanding existing data centers, outsourcing to a colocation provider, or some combination of in- house and outsourcing.

The prevailing trend is outsourcing at the time of this white paper with more than 51 percent of the data center footprint in North America being outsourced to colocation, integrators or MSP's, and investment in outsourcing and colocation experiencing 16.1 percent compound annual growth.[2]

[2] 451 Research® 2016 Voice of the Enterprise Report, Feb 2016
Research and Markets® Colocation Market Report

There are many reasons for this shift, which will be explained further in this paper, but in summary they include:
> Lower costs
> Speed of deployment
> Improved energy efficiency
> Compliance support
> High availability
> Simplified management / operational efficiency
> Focus investment in the core business as opposed to data centers

In addition, the data center colocation market is undergoing something of a paradigm shift. Providers with deep experience in addressing the operational needs of customers are delivering a full suite of services that go beyond the traditional "commodity" approach. This offering is typically comprised of basic space and power with minimal security, bandwidth, compliance, and "enterprise-class" features.

The emergence of these providers is opening up options for companies to take advantage of a more services-based approach to outsourcing that many businesses are finding much more applicable and appropriate for today's IT environments. For example, enterprise-class colocation providers are giving

organizations far more control over their data centers through advanced features such as data center infra-structure management (DCIM), compliance support, migration services, asset tracking, and more. The result is that organizations are using a colocation solution that looks and feels like an internal data center.

To understand which solution (or solutions) makes the most sense for an organization, the data center team should start by asking the right questions – not just of the potential colocation provider, but of the organization as a whole and its IT capabilities. What are the factors driving this data center build versus buy decision? Is the existing data center running out of space and power?

Is the infrastructure outdated? Are basic compliance requirements and standards not being met? Are available capacity and procurement cycles not keeping up with end- user demand? The aforementioned 10 Situations to Choose Colocation over Data Center Construction may just scratch the surface. Take into consideration the following 16 factors that may also influence build versus buy.

16 FACTORS THAT MAY INFLUENCE YOUR NEXT BUILD VS. BUY DATA CENTER DECISION

1 How the Data Center Will Be Used

2 Specific Reliability / Availability Requirements

3 Short / Long-Term Storage Capacity Constraints

5 Specific Requirements of Hardware Being Used

6 On-Site / In-Market Data Center Staffing Requirements

7 Bandwidth Capacity, Specific Provider/s Need, Location/s

8 Production or Backup/DR Data Center Environment

9 Budget Constraints Mandating Maximum Cost Efficiency

10 Operational Cost Projections / Predictability Requirements

11 Specific Data Center Time-to-Market Requirements

12 In-House or Outsourced Data Center Migration Services

13 In-House or Outsourced Data Center Installation (Cabling, Engineering, etc.)

14 Post-Implementation Security and Compliance Review, Audit

15 On-Demand Support Services for One-Time / Ad Hoc Needs

16 Up-Front Capital Needs for Data Center Initiative

GETTING STARTED

FOUR CRITICAL SUCCESS FACTORS

As the breadth and depth of these questions indicates, there are many important factors that go into deciding which data center approach is best. This section examines four critical success factors that need to be addressed in deciding to build or buy. Each success factor will provide critical questions to help determine what is available via existing in-house resources and what may mandate outsourced resources from a colocation provider.

ECONOMICS

There is no way around it. Building a data center takes a lot of time and money. The Forrester® Total Economic Impact™ study on the economics of data center facilities addressed the topic directly by stating, "Building a data center is not economical for most companies."

In fact, the research showed that in most cases,3 the cost of leasing an enterprise data center versus building was more than 25 percent lower over the course of 15 years.4 One of the biggest challenges with new data center construction is the time it takes to get the project off the ground, which can stretch out to more than two years.

For example, consider normal corporate culture with regard to a process like consensus building. How long will it take to get all stakeholders aligned? Are there competing interests?

Before construction can begin, a thorough site selection process must take place to ensure the site / parcel meets with a wide-range of business needs. Land procurement also takes time and is influenced positively by local and state governments offering data center incentives.

Again, the challenge in today's era is that technology is evolving rapidly, particularly with virtualization and cloud computing, and organizations run the risk of data centers becoming obsolete by the time construction is completed.

If speed-to-market is a critical determining factor, colocation provides a compelling value proposition. With ample existing space and power as well as a completed facility, an organization's colocation deployment can be live in a matter of weeks after contract execution.

CRITICAL ECONOMICS QUESTIONS
> What is the level of redundancy needed and how much will it cost?
> How much bandwidth is needed? Where and how will it be accessed?
> How much power and cooling is required now? How much is necessary in 1 year? 3 years? 5 years?
> How much hardware is needed to address growing end-user demand over the life of the data center?

Do long-term projections include changes to current demand levels over time to account for new innovation?

With new data center construction, the wrong answer to any of the above questions - or simply not paying careful enough attention to them - can be costly. If, for example, capacity is underestimated, the cycle starts all over again with a new build versus buy decision. If capacity is overestimated, there can be a significant amount of wasted resources as capacity goes unused.

By choosing to buy rather than build, organizations not only lower costs in a number of areas, but they also reduce the risk of unnecessary future data center spend. By working with a colocation provider, organizations ensure the following.

> Maximum cost efficiency achieved by leasing capacity that supports short-term needs and then scaling up or down on demand, according to market / demand trends
> Use of the colocation provider's tools to better project power / resource utilization trends for increased forecasting accuracy
> Establish a more predictable operational cost structure for efficient planning and successful budget maximization
> Take advantage of the colocation provider's economy of scale and enterprise-ready data center design that provides reliable, efficient long-term power and cooling resources

STAFFING AND EXPERTISE

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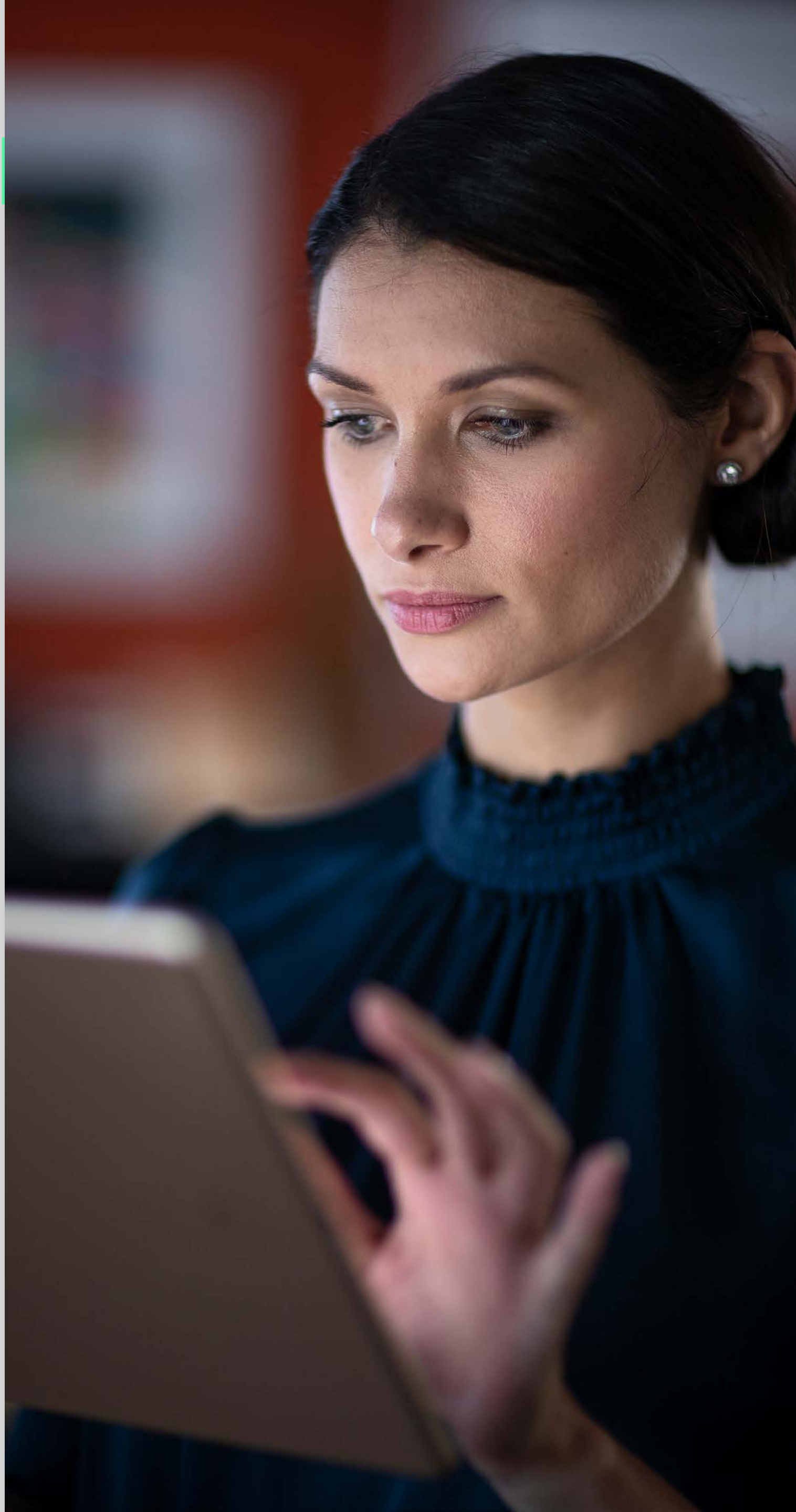
Staffing and expertise concerns impact costs as well, but are worthy of a separate discussion. The paradox is that data center technology is getting more complicated on the one hand, with cloud, virtualization, big data, and mobility.

On the other hand, staffing is becoming less complex with converged management platforms and software-defined solutions. A big issue in the build-versus-buy debate centers on understanding the core competency of the organization. Is being in the data center owner / operator business the right focus, or does it make sense to devote more resources to the core offering?

If you decide to be in the data center business, can you hire all the staff you will need? Will there be sufficient human resources available to deliver the various technologies, interdependencies and regulations that govern the data center?

Just looking at the critical areas of storage, networks, and servers, there are major changes taking place with software-defined networks, software-defined storage, object storage, and flash that mandate highly specialized talent.

Then add application, performance, security, mobility, big data, cloud computing, and information governance considerations to the staffing equation and the pool of necessary, specialized talent becomes intimidating in a time when qualified IT personnel are hard to find.

CRITICAL ECONOMICS QUESTIONS
> Can the organization operate a data center better than a third party whose business is building and managing modern data centers?
> Has the organization considered the costs of hiring all necessary data center subject matter experts?
> Does the organization need to hire staff that has been trained in compliance procedures and practices?
> Does the organization need value-added services such as network provisioning and asset tracking?

RISK TOLERANCE

How much risk is appropriate when considering new data center construction? Is the organization willing to take the risk that it might take two to three years before the new facility is online and ready to assume the excess demand? As mentioned earlier, is the organization willing to risk under or over-provisioned resources?

What if the construction site selected puts the data center at an increased risk of natural disaster? How much downtime can the organization afford?

These are all factors to consider. In building a data center, these risks can be mitigated by hiring the right people, performing the right due diligence, and taking the time necessary to ensure that all of the I's are dotted and the T's are crossed. And, of course, there will always be risks involved in data centers, whether it is built or bought.

However, leasing provides a much greater opportunity to reduce risk, particularly if a reputable colocation provider is selected (enterprise-ready facilities, proven track record of successfully managing the information requirements of companies of all sizes and addressing critical issues, such as disaster recovery).

CRITICAL ECONOMICS QUESTIONS
> How costly is downtime to the organization?
> How quickly can the organization recover in the event of a disaster?
> Is owning / operating a data center worth the massive investment in construction, staffing and operations?
> Even with a redundant data center, does the organization have the people and expertise necessary to avoid critical human errors - the most common cause of downtime?
> Does the organization have the resources necessary to build and test a proper disaster recovery plan?

Another important factor in evaluating risks revolves around the whole idea of "control". Some organizations will not move to a colocation facility because they are afraid of adding risk by not being in complete control of their facilities and equipment.
However, with improvements in management and monitoring technology such as DCIM, along with advanced services offered by colocation providers such as asset tracking and migration services, organizations can achieve the economic benefits of buying without losing the control they seek to attain through building.

Control is much less of an issue than it has been in the past, provided organizations work with a colocation provider that delivers services such as data center infrastructure management, asset tracking, network neutrality, and migration services, among others.

COMPLIANCE AND SECURITY

Ensuring regulatory and industry compliance comprises a wide range of issues. There are standards that are specific to the operations of the data center itself, such as SOC 2 Type II and ISO 27001; and there are industry-specific regulations such as Health Insurance Portability and Accountability Act (HIPAA), Payment Card Industry Data Security Standard (PCI DSS), Federal Information Security Management Act (FISMA), and many others.

There are rules that must be followed for managing and tracking assets, managing and tracking data, and properly disposing of assets. Is the organization able to properly address these regulations and enforceable processes with purely in-house resources?

Another challenge to face with compliance, is having the right people in place with the skill set that enables an organization to stay compliant with regard to the data center and information requirements of the specific industry. Are the available staff members sufficient to get through a robust compliance audit? This is not an everyday activity / requirement, but it is complicated, challenging and time consuming for the IT staff involved. A reputable colocation provider

will have the right people and comprehensive data center compliance program to support your audit process.

Security is always a challenge. When most IT professionals think about security, they think about hackers and others who would do harm to the business through computer networks. But security of the physical space is also an important issue in planning a new data center. Strict security guidelines are necessary with processes that are documented and audited, along with 24x7x365 protection that goes far beyond locks on doors.

In evaluating colocation benefits, it is important to consider working with a vendor that has compliance expertise across all industries and stays current with changes as they occur. Organizations can increase audit efficiency and effectiveness by leveraging colocation personnel, compliant facilities, subject matter experts and infrastructure from power and cooling to physical security.

CRITICAL ECONOMICS QUESTIONS

> Is the necessary expertise / staff in pace to build a data center that meets all of the compliance requirements, including those within a specific industry?
> Are there existing, compliant processes in place? Has the organization responded well to audits in the past?
> Does the organization have the time / bandwidth for ongoing data center compliance training?
> Can the organization adjust quickly to new compliance requirements?
> Does the organization have enforceable and auditable security guidelines and procedures?
> Does the organization have fully vetted, background-checked security staff to ensure 24x7x365 coverage?

CONCLUSION

Sustainable Silicon Valley is a nonprofit organization devoted primarily to environmental improvement. The organization does not have a financial stake in the "build versus buy" decision and does a good job of summing up why "buy" is not only better for the economy and the environment, but also better for individual organizations.

In times of tight fiscal controls, executives must carefully weigh the tradeoffs between capital expenditures intended to reduce operating costs and ensure optimal performance versus leasing enterprise-ready data center services from a colocation provider.

Either way, moving to an advanced data center model requires an unprecedented level of cooperation across the organization. Silos must fall. The required expertise includes facilities, IT, hardware, security, software, and power management. Because of the complexity of this undertaking and potential benefits, organizations with data centers on the path to obsolescence are turning to data center developers.

The right developers – those with experience and expertise – can guide an organization in its quest to reduce capital costs while overhauling existing IT systems. The most advanced data center developers combine green building design and other advanced data and energy management solutions to significantly reduce energy consumption, thus dramatically improving Power Usage Effectiveness (PUE) and Data Center Efficiency (DCE). Customers of these providers benefit from:

> **A lower cost for data center services**
> **Brand benefits that accrue from contracting with environmentally responsible suppliers**
> **Robust security**
> **Insurance against the risk of rising energy and real estate prices**
> **Protection against power supply interruptions**

Organizational leadership without fear avoids the cost of significant capital upgrades or replacement of aging and obsolete data center facilities by choosing colocation.

"IN TIMES OF TIGHT FISCAL CONTROLS, EXECUTIVES MUST CAREFULLY WEIGH THE TRADEOFFS BETWEEN CAPITAL EXPENDITURES INTENDED TO REDUCE OPERATING COSTS AND PERFORMANCE OPTIMIZATION VERSUS LEASING ENTERPRISE-READY DATA CENTER SERVICES FROM A COLOCATION PROVIDER. EITHER WAY, **MOVING TO AN ADVANCED DATA CENTER MODEL REQUIRES AN UNPRECEDENTED LEVEL OF COOPERATION ACROSS THE ORGANIZATION.** SILOS MUST FALL."

This type of leadership does not manage each data center purely to minimize costs. They also look for energy management, server design and layout solutions that optimize data center performance. They assemble staff from facilities, information technology, and the primary internal data services customers, to provide superior performance with the necessary level of availability, security, and system resiliency.[5]

[5] Smart Data Center Revolution, Sustainable Silicon Valley, July 26, 2011

WHO TO CONTACT

Visit our website for more contact details:

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