WHITE PAPER:

The Colocation Decision

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Executive Overview

Today's organizations are largely dependent on the quality and availability of their IT applications and data for day-to-day operations. Disruptions to IT services, even for a few minutes, can be very expensive, especially to a business highly dependent on systems and applications. And reduced revenue and/or increased costs grow exponentially if an organization cannot access their data for an extended period of time. In addition to maintaining application availability, organizations are under constant pressure to keep computing costs down. To remain competitive, companies need absolute computing reliability with a focus on core competencies and market differentiators, but with minimal overhead. That's why colocation services can be a smart idea.

Business and IT leaders have a responsibility to ensure the quality and availability of both applications and data to employees, clients and stakeholders. They must decide where to house network servers, applications and storage so resources are protected and accessible. In addition to establishing a primary data center, they also need to consider continuity and disaster recovery and make strategic decisions about maintaining failover systems or a secondary facility.

This dilemma brings the colocation conundrum into sharp focus. Management needs to assess the pros and cons of establishing an internal data center or finding a colocation facility to host data center operations, i.e. build versus buy, or some hybrid strategy that includes on-premises and colocation computing.

Decision Considerations

As computing technology has become more complex and data center demands now encompass additional considerations such as mobile computing, virtualization and cloud computing, the build versus buy discussion has become more complex. More Internet capacity is required; there needs to be greater density and more scalability. Data centers are becoming larger and continuing to grow; systems are required to handle larger workloads with existing resources and accommodate emerging technologies.

In brief, data centers require scalability and redundancy, and that requires investment.

When you look at the expense of maintaining this kind of data center infrastructure, it simplifies build versus buy considerations. Most IT organizations don't want to commit the capital investment required to accommodate a rapidly growing data center environment. Keeping up with growing workloads requires a substantial upfront fiscal commitment, and then ongoing investment to keep pace.

Finally, most organizations don't want to be in the data center business, but they know they need reliable, secure and scalable computing resources. When most organizations take a hard look at costs and returns, it often becomes clear that some form of colocation service will increase scalability and reliability while reducing costs.

Can You Really Afford to Build?

Jeff Paschke, senior analyst at Tier1 Research, told Computerworld that when considering your data governance needs, the best strategy is to conduct a 'buy versus build' analysis, comparing the expense of building a data center to the cost of purchasing an IT infrastructure from an outside provider. Usually, the colocation option ends up winning.

'You absolutely need to do the buy versus build analysis,' Paschke said. 'I am a former enterprise data center manager, and from what I know now, more should be using colocation than they do.'

Paschke noted that often, CTOs aren't able to build their own data centers without first turning to their CEOs and CFOs and asking for a massive down payment – say, $50 million – to begin construction. This is almost never feasible, and it's why companies these days usually end up opting for colocation.

Cost Considerations

A financial analysis is critical to making a sound decision about building or upgrading a data center or outsourcing to a colocation provider. Regardless of whether a data center is owned or outsourced, it will incur the same types of capital and operating expenses. With an on-premises data center, the organization has to absorb all operating expenses, where a colocation provider has economies of scale and negotiating power that allows them to build and operate their data center for less (i.e. lower cost/watt to build, better electricity rates, better bandwidth rates, etc.).

A well-constructed total cost of ownership (TCO) model is a critical part of the decision-making process. Identifying and weighing the value of TCO variables when specifying, building and operating a data center can be elusive. A simple miscalculation can cost companies millions of dollars every year. It is imperative to make sure all costs, even those that are difficult to quantify, are considered in the TCO calculation.

Here are some cost estimates based on our decades of experience:

Cost	Considerations
Electrical Power	Could run $7,500 or more per cabinet annually, which may be double that of data center providers who receive volume discounts from utilities and have facilities that use power more efficiently.
Cooling Water	Similar to electrical with providers receiving volume discounts and being more efficient (free cooling).
Equipment Maintenance	Vendor maintenance can be 10% of the initial cost of equipment per year, and replacement of back-up batteries, generators and electrical systems must be planned for.
Technical Staff and Training	A data center manager ($60k-$80k) and additional technical and/or security staff ($40k-$60k) must be hired for operations. Employee training must be accounted for. Keeping staff with expertise is increasingly difficult in the IT marketplace, so wage inflation or recruiting costs to backfill lost employees are to be expected. Added risk associated with staff turnover.
Organizational Focus	Operating a data center can take up the time of many others in an organization - executive, vendor and utility relations, legal and environmental, government and regulatory, accounting and audit, telecom.

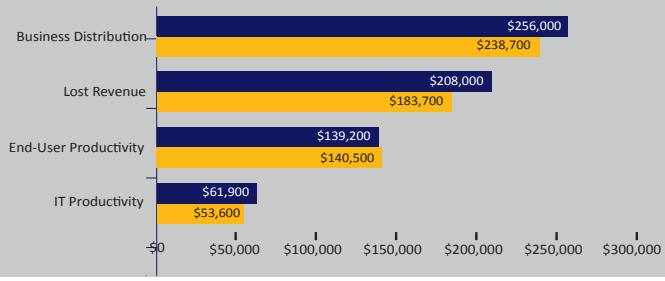
Outage Risk

The potential cost of a data center outage continues to rise as more critical business systems come to rely on information housed in the data center. The Ponemon Institute (in a study sponsored by Emerson Network Power) published the Cost of Data Center Outages study in 2016. The purpose of the study is to analyze the cost consequences of unplanned data center outages. The study reports:

- The average cost of a data center outage was $740,357, up 38% from 2010 to 2015.
- The average cost per minute was $8,851, up 58% from 2010 to 2015.
- The cost is higher in certain verticals – communications, healthcare, e-commerce and financial services.

The Costly Breakdown

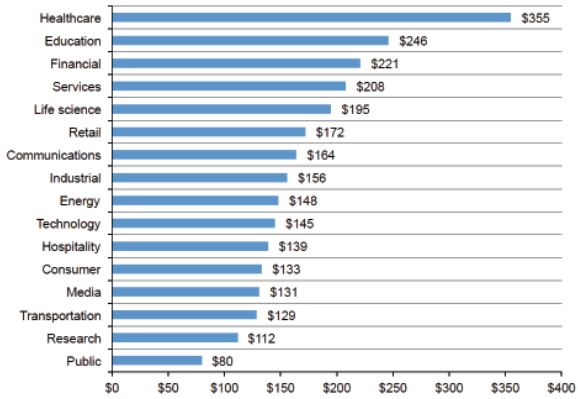
Costs from outages are on the rise. All average total costs of consequences from unplanned outages increased the past five years. **Most notable: Lost revenue from unplanned outages has increased by 77% since 2010.**



Data Security Breach

The cost of a data security breach also continues to grow. In 2016, the average total organizational cost of a data breach in the U.S. was $7.01 million. The costs do vary by industry with healthcare leading the way. The Ponemon Institute published the 2016 Cost of Data Breach Study (sponsored by IBM), which evaluates the cost and causes of data breaches across various industries. The chart below reports the average costs per industry classification:

Per capital cost by industry classification
Consolidated view (n=350), measured in US$



While malicious acts account for 48% of data breaches, system glitches and human error still make up the other 52%. Internal processes and procedures need to be rigorous and routinely audited to bolster enterprise security. There also are other factors to consider:

- Maintaining multi-factor security protocols
- Having the expertise to address compliance/audits
  - HIPAA
  - PCI
  - SSAE18 Type 2
  - ISO
  - ITIL certification for all operational employees

The cost of the breach and subsequent remediation is not the only consideration. Organizations are highly susceptible to customer churn after a security breach. The cost associated with lost business following a data breach is up to $3.97 million in 2016 for U.S. companies. This cost component includes the abnormal turnover of customers, increased customer acquisition activities, reputation losses and diminished goodwill. The top four industries experiencing abnormally high churn after a breach are financial, healthcare, the services industry and technology.

All of these concerns can be minimized by transferring responsibility to a qualified colocation partner; an expert with the expertise and dedicated resources to address all these challenges.

Colocation Benefits

Businesses of all sizes in all markets are discovering that leveraging colocation services from a data center provider offers a number of advantages. Much of the growth in colocation adoption is being driven by the financial and operational benefits associated with data center outsourcing, including:

Cost Savings

Colocation provides economy of scale. A data center built for a single company is expensive. A data center built for use by multiple organizations reduces the cost for every customer because of shared resources. Organizations are moving into colocation data centers to leverage these economies of scale and avoid capital expenditures, opting instead for a fixed operating expense model.

In-house data centers require huge capital to build, and many organizations still fall short of providing higher levels of redundancy offered by commercial colocation data centers. Costs also mount for in-house support staff, as well as for increased budgets to accommodate expansion. Colocation offers qualified expert management, remote hands support and a flexible growth model.

Increased Security and Uptime

Any business that relies on data for its operations has to be concerned with data security and system uptime.

For business owners who are trusted with customerdata, such as patient records or credit card data, data security has to be at the top of their priority list. By working with the right colocation data center, you can be sure that you have security professionals on staff and the best virtual and physical security measures that are already in place.

Owning and operating a secure data center requires advanced security measures that most in-house data centers are ill-equipped to provide. Having the personnel, technology and processes in place to maintain a highly-secure environment requires advanced technical capabilities and a substantial financial investment. Colocation service providers can offer the required controlled access, biometric scanning, video surveillance, alarm systems, controlled access, 24/7 on-site security guards and reinforced physical structure that are part of superior data security.

Colocation service providers also offer service level agreements (SLA) that guarantee system uptime. SLAs should guarantee the performance of all key environmental and infrastructure elements of their facility. This ensures the building design and systems are state-of-the-art and maintained at the highest level to avoid downtime and subsequent financial penalties.

Extensibility to accommodate business growth

Corporate data centers have limited expansion capability. First there is cost. Adding servers and data storage is expensive, and the more computing power you need the more hardware you need to install. Plus, you need the additional power, personnel and resources to accommodate the added computing capacity.

And then there is physical space. Most companies have physical constraints to data center expansion; they just don't have the room to accommodate more data center capacity.

Outsourcing to a colocation provider eliminates any worries about growth. A colocation center is designed to grow with customers' needs. You also get a predictable operating expense model and avoid capital outlays and personnel additions that require advance planning and time as well as expense; typically, a colocator can add capacity in days rather than months.

Power Redundancy

Reliable computing requires reliable power. Providing power redundancy on-site can be an extremely expensive proposition that demands backup batteries and generators. And there is still the risk of losing power to servers and systems.

Part of the colocation provider's SLA commitment is to provide consistent power; you simply have to plug in your servers. Colocation facilities are protected by state-of-the-art UPS and diesel generator backup systems. Most power systems used by data centers have the capacity to power a small town for days. Moreover, a reputable data center will also ensure that there is a secondary backup system for the backup system.

Power Density and Cooling

Maintaining a high power density data center makes it easier to expand without increasing the physical footprint. As the data center grows, power density will become increasingly important. Colocation customers that choose a high-density power environment typically have a lower total cost of ownership and see greater returns over time. As their business expands and requires more servers and more power, they can scale their infrastructure without investing in a larger colocation footprint.

Cooling is typically the greatest expense for any data center. By adopting a high power density model, you can increase computing capacity without adding chillers.

Compliance

For regulated businesses, compliance has become the centerpiece of data planning. Many of today's businesses must comply with various government regulatory and industry standards. Without dedicated staff and compliance expertise, it in-house data centers are compliant and auditable.

Commercial colocation facilities are experts at regulatory compliance. The colocation provider enables organizations to cost effectively comply with ever-changing federal regulations and industry standards such as HIPAA/HITECH, PCI, Safe-Harbor, FISMA, SSAE18, ISO and others.

Enhanced Performance, Speed and Connectivity

Moving to a colocation site can have a positive impact on the overall performance of your network. Organizations can benefit from the faster networking speeds and resilient connectivity offered by colocation.

Most colocation data centers offer connections to multiple telecommunications providers. Having data pipes with more bandwidth means businesses benefit from better service and faster connectivity at a reduced cost.

Expert Management

Data center monitoring and systems management is an ongoing challenge for IT staff. Professional data centers are managed by qualified experts who have access to the latest monitoring tools. They also have around-the-clock maintenance personnel. If there are technical or environmental issues that need to be immediately addressed, the right people will be immediately alerted. This high level of monitoring can ensure that problems are recognized even before they occur and impact vital systems.

By retaining expert data center operators who are experts in their field, CIOs don't have to worry about managing and maintaining a data center to ensure peak performance. When CIOs don't have to worry about the data center facility, they can devote more resources to accomplishing corporate goals.

Integrated Support

Data centers have support teams ready to manage customers' needs 24/7. Colocation facilities offer smart hands services, such as replacing hard drives, physical reboots and installing system cabling. They also offer fully managed support services, which can include monitoring, maintenance and management of the operating system and application layers. With colocation, organizations no longer need to worry about patch management and other support functions that consume so much of IT staff time.

This level of support and regular maintenance often proves to be prohibitively expensive to handle internally. Rather than supporting the day-to-day data center operations, IT employees can be placed in more strategic roles.

Conclusion

Internal operation of a data center consumes valuable financial and human resources at every level of an organization. Colocation allows you to maximize the potential of your business by delivering state-of-the-art infrastructure combined with professional facilities management. This frees up internal resources that can be shifted to strategic business projects, shortening deployment time and improving revenue generation.

About OneNeck IT Solutions

OneNeck IT Solutions LLC offers hybrid IT solutions including cloud and hosting solutions, managed services, enterprise application management, advanced IT services, IT hardware and top-tier data centers in Arizona, Colorado, Iowa, Minnesota, New Jersey, Oregon and Wisconsin. OneNeck's team of technology professionals manage secure, world-class, hybrid IT infrastructures and applications for businesses around the country.

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