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A REAL-WORLD LOOK AT DATA CENTER RELOCATION

IT managers sound off about what they learned from relocating their organization's data centers

A combination of factors is making data center relocation much more common today than it has ever been. When assessing whether to move, data growth, disaster recovery strategies, the availability of less expensive or skilled labor, real estate values, and the cost of electricity all come into play.

Regardless of the reason for a data center relocation, the burden of carrying out such a move falls on IT managers and their departments. And as anyone in IT knows, the daily challenges of running a data center have been increasing, due to the complexity of managing today's heterogeneous server, storage, and network environments. Additionally, IT staffs have taken more duties to ensure that data and systems are protected and compliant with government and industry regulations.

The additional challenge of carrying out a relocation requires staff resource management, meticulous planning, and a tighter relationship between IT and the business to meet application and data availability obligations, as well as regulatory requirements.

To provide a forum for discussion, learning, and idea exchange among IT managers on challenges and best practices in data center relocation, Ziff Davis Enterprise hosted 30 IT managers at a roundtable event in Chicago. Sponsored by Brocade, the event brought together data center managers from medium- to large-size organizations in fields such as finance, healthcare, education, manufacturing, and retail distribution. Attendees discussed a wide range of drivers and challenges inherent in data center relocation. Presented below is a report of the primary drivers, issues, strategies, and lessons learned by these IT managers.

RELOCATION DRIVERS

While a solid Disaster Recovery (DR) strategy and infrastructure is paramount to ensuring redundancy and failover in case of a disruptive event, it is not considered a primary driver for data center relocation, according to attendees at the Chicago event. "It's not driving a move; it's driving an addition," one IT manager stated.

IT managers agreed that the increasing energy costs needed for powering and cooling servers is a driver for data center relocation, especially given the cost differences that can be found across the country. For example, Yahoo!, Google, and Microsoft all plan or have opened new data centers in the Pacific Northwest due to the availability of relatively low-cost hydro-electric power in that region.

IT managers stated that energy costs are inextricably linked to other relocation drivers and issues, such as real estate costs and skilled labor in a region.

DID YOU KNOW?

The rising cost of electricity, the need for redundant capabilities and the increased density offered by blade servers are quickly making the cost of trying to upgrade a data center an exercise in futility. Soon it will be faster, cheaper and more efficient to build a new data center than to try to rebuild that wheezing energy hog where your servers now exist.

Source: eWeek Editorial

“We’re moving our data center out of our headquarters due to the high dollar-per-square-foot cost,” one attendee related. Another added, “Real estate that we have elsewhere is worth a lot of money, and we’ll relocate just to rip the building down and sell the property.” Still another IT manager added, “We considered moving our data centers offshore due to real estate cost.”

One factor that is forcing many companies to consider data center relocation is that their present facilities are running out of room. “We moved our data center three years ago because we tripled the capacity. We’re tripling capacity again, and we’re moving again in two months,” one IT manager said.

Running out of data center floor space was broadly cited by the group of attendees as a reason for relocation. However, besides exceeding space limits in existing data centers, some face another problem. With rack densities increasing, “We reached weight limits, where we had to move for almost that reason alone,” another attendee said.

DID YOU KNOW?

Five years ago, a typical server rack had a power density of between 1 and 5 kW of electricity per rack. Due to higher performance and higher density systems, that number has grown to about 18 kW per rack.

Source: CIO Magazine

One contributing factor to the floor space issue is storage growth. Thanks to new data retention laws and increasing legal and commercial regulation, organizations must now retain more digital information than ever before. Although all IT managers present at the event related that their companies were indeed feeling the effects of intense data proliferation, storage growth was not necessarily pinpointed as a main driver for data center relocation—at least not yet. “We’ve been seeing a 20% annual growth in storage, so it’s not like we’re caught completely off-guard by the explosion in storage capacity needs,” one attendee said.

Another contributor to the floor space issue is server sprawl. Many companies deploy a new server for every new

DID YOU KNOW?

Even as companies were reining in costs to address the harsh economic conditions, the total disk storage capacity shipped on average was growing by almost 30 percent annually.

Source: IDC

application. Over the years, the result is a large number of under-utilized servers, all of which require rack space, electricity to run and cool, and IT management time.

“Although it was easy to cost-allocate the servers back to the business units from a cost perspective, we found out there’s 20% to 30% utilization on some servers, which all are still giving off heat and drawing power,” explained one attendee. “The virtualization model is forcing us to reverse that before we take the next step and modify the data center. Right now, I’m forced to look at virtualization and consolidate servers to get them up to 80% utilization.”

Many of the attendees said they were already adopting virtualization approaches before a relocation, to ensure that fewer servers would need to be moved and to establish higher efficiency rates for the new facility from day one.

One additional factor was cited for data center relocation: mergers and acquisitions (M&A). “For us, the biggest driver has been consolidating data centers through mergers and acquisitions,” stated one IT manager.

Closely linked to M&A activity is business line segregation. “We have lines of business that we want to segregate that eventually we’ll want to sell,” an attendee explained. Another stated, “We’ve got a hundred-year-old company north of Chicago that had housed our organization’s major data center for years. In 1980, when client-server technology came into play, we brought this data center into Chicago, and that’s just because the mainframe people didn’t want to deal with it. Now, we don’t want to take the underwriting risk anymore. We want to sell it as a package, nice and clean.”

For one IT manager, post-acquisition integration proved to be a constant challenge. “It’s an afterthought,” he stated. “Even in the finance community, the last thing that’s done—

and probably the one that's handled the worst in terms of the overall M&A space—is integrating the acquired companies.” He related that too often, there is a disconnect between executive management’s understanding of what it takes to effectively integrate two or more disparate data centers and the top-line realities of preparation, execution, and associated costs therein if not handled properly.

RELOCATION CHALLENGES AND LESSONS

Configuration Management Database (CMDB)

Most attendees said they felt they understood the value of a CMDB or similar system, but that such systems were too expensive and complex, and thus not on the list of top priorities. “Nobody wants to absorb the cost,” said one IT manager.

DID YOU KNOW?

The CMDB Working Group’s initial mission was to create a common specification or protocol for sharing configuration information across a federation of data sources.

Source: eWeek

When asked if attendees had a CMDB in place to aid in setting up a new data center, most said they had some measure in place, be it a CMDB, change management, or asset inventory system.

For example, one attendee related that his company uses a configuration control process as a guidance tool. Others had more formal systems in place. For instance, one attendee noted, “We use change management best practices and follow guidelines.”

Still, the time requirement to collect change management information and manage it can be enormous. One attendee related that his organization had a three-person department essentially dedicated to data warehouse management and asset control.

But the time (and labor) investment is essential to

avoid problems. For one attendee, lack of solid configuration control proved to be the biggest pain point in his recent data center relocation. “That was actually the hardest part of our move—not knowing what we could move or what we could turn on without affecting other things,” the IT manager said. He explained that he and his staff tried to gain visibility about system interdependencies via informal processes, and that doing so added months to the overall logistical planning process for his data center move. “It was all a manual process,” he explained, “going through all the support groups and development groups and saying, ‘If we move this [server], what does it touch and where are all the interactions on this particular application?’”

Disconnect on Business Rationale

Opinions were somewhat divided on the subject of CIOs having enough understanding of the business or access to executive management to make a solid business case for a data center relocation.

“I think that’s the biggest disconnect: The CIO has had his or her foot too far into the data center and not far enough into the executive suite to really understand what’s going on,” an attendee said.

Another attendee disagreed: “I think that’s changing. In our organization, we sit at the table with business units, and we’re part of the discussion about how we’re going to drive business.”

One attendee advised senior IT managers who are making a business case for a data center relocation to approach executive management with the premise that doing so will help grow the business. “That would be a strategic advantage, versus just moving it because it’s hot and we ran out of floor space,” he stated.

Lack of Defined Deployment Strategy

The moderator then asked about deployment strategies. Most attendees related that, on the whole, they didn’t have a clearly defined deployment strategy for their data centers. Many said that data center build-out and relocation strategies often were evolutionary, coming about more as a result of bottom-up demands (such as data proliferation, storage

needs, floor space constraints, and cooling costs) versus traditional top-down drivers (such as M&A activity and total cost of ownership issues).

Minimizing Downtime, Maximizing Application Availability

Data center managers who had already relocated a data center in the recent past cited a wide range of scheduled outages as a result, lasting from seconds to days.

“We had a 10-second hiccup at the final switchover, and that was acceptable,” said a data center manager who was charged with moving 10,000 servers. For most of the other attendees, however, planned outages averaged 24 to 48 hours, depending on the type of business and the service level agreements (SLAs) IT had with their business units.

These outages correlated directly to the nature of attendees’ businesses. Financial services and medical facilities organizations required high availability of their critical applications and had the shortest downtimes; educational institutions were able to take advantage of holiday weekends and school vacations to schedule much longer sustained downtimes.

IT managers who moved a data center in the last two to three years related that business manager expectations today were for tighter SLAs, thereby mandating less downtime during a move. Attendees estimated that 20% to 30% of their applications were high-availability with tight SLAs; the remaining 70% to 80% were non-critical.

Attendees also noted that any production-related moves were deemed mission-critical and thus required high availability for applications, while DR or secondary data center relocations could tolerate more downtime if necessary. Only one attendee stated otherwise: “Everything I moved was all deemed critical and had to be 100%. That’s why I had to do the move in phases, and have everything built [at the new facility] and then just cut over to it.”

Attendees also related that scheduled downtime as a result of a data center move correlated directly with the level at which production systems were required to support

customer-facing needs (such as Web sites) and executive-facing needs (such as on-line internal business intelligence tools). “This was a lot easier before we had the Internet,” one attendee stated.

Project Planning and Logistics

When it came to the actual data center relocation, attendees employed numerous approaches that involved a combination of using internal staff and third-party solutions providers.

“My own people will be doing a large bulk of the planning and design work,” one IT manager said. “During the move, I’m going to be hiring an army of tech movers to do the physical re-racking [of equipment].” Several attendees had similar plans. Data migration and replication were also listed among tasks that most attendees said they outsourced.

When attendees were asked if they would handle their next move in the same manner as their last, their opinions varied. “If we had to do it again, we would do it ourselves,” one IT manager said. Another stated, “We’re having somebody else do it.” Still another added, “One thing I will push for in our upcoming move will be a phased approach versus a big bang. It’s too much of a drain and risk for the employees. IT is never a 9-to-5 job, but now you’re asking for 50, 60, 70 hours a week.”

Regardless of deployment strategy, attendees said that relocations tended to be relegated to the weekends, starting Friday evening and generally going through Sunday late afternoon.

The total time spent from project planning to completion—planning, building, individual testing, system-wide testing, and cut-over to the new data center—also varied widely among attendees. “The whole move process for us took about seven months,” related one attendee charged with moving approximately 100 servers.

The IT manager who moved 10,000 servers noted that he allocated approximately four hours per server for his data center relocation, and that his phased approach was to move 200 servers during a weekend. Another attendee who is in the planning stages of a move noted that he could probably move upwards of 300 or more servers (including associated storage systems) in a 36-hour window.

In terms of cost and complexity, attendees all agreed that data center relocation is an expensive undertaking regardless of approach. “You’re trying to do it without impacting any of your business,” one IT manager said. He noted that keeping applications available meant buying and installing duplicate equipment and systems, while migrating and tearing down old systems.

One attendee raised an interesting point about logistics he learned from a past move. “We assumed that the electrical utility from Town A was the same in Town B 40 miles away, but that wasn’t the case,” he said. He noted that his move involved two utilities and two telcos, each with different response times whenever problems came up. “Dealing with these types of things was a major nightmare,” he said. “I’ll do a better job of planning this part next time. I’ll test everything, and do a better simulation of DNS changes to make sure everything works beforehand.”

Regulatory Compliance/Audits

In today’s business climate, where more and more data falls under government or industry protection and retention regulations, compliance and auditing are essential parts of any data center relocation.

“We’re implementing Visa PCI (payment card industry) compliance as part of our move,” an attendee at a financial services firm said. In his organization’s case, this implementation is driving the physical layout of the new building because of the level of authentications that are required for anyone to access the data centers. For instance, people who look at card-member information have to be segregated from people who work in the mailroom or other areas. Another design implication is that the PCI requirements render the previous method of controlling data center access (via swipe card authentication) inadequate. The new data center must incorporate a card plus a biometric identifier or numerical keypad.

Another IT manager related that his company’s audit department was involved from day one with the data center relocation efforts it undertook for one of its clients. “We had to comply with SOX [Sarbanes-Oxley financial and accounting disclosure], so our audit team was making sure that we had the staff to comply, that every database was going to be

relocated in a timely manner, etc.—essentially making sure that these moves were not going to impact the business,” the attendee said.

Others raised concerns about records retention. “One of the trends I’ve seen is that we are keeping data longer, and storing more kinds of data,” an attendee said. “Before [the new regulations], we had fairly standard cutoffs for tax purposes or best practices for how long we’re going to keep data. A lot of what I’m seeing now is, ‘Keep it forever.’” This obviously has implications on storage capacity and storage management, which need to be addressed when planning a data center relocation.

Going hand-in-hand with data retention, companies must now also be able to retrieve information quickly on request from government agencies and even litigators, thanks to new eDiscovery laws that went into effect last December. This, too, can have implications in the design and planning of a data center relocation. “I [recently] attended an American Health Lawyers conference, and what impressed me there was the issue of eDiscovery,” said an IT manager from a healthcare organization. “They were talking about one discovery costing in upwards of a million dollars, just to go and pull that data.”

“All of these regulations are requiring a huge amount of documentation,” another attendee concluded. “We have a whole group in our company that only handles regulatory stuff, and they’re making life difficult for everyone.”

Staffing Expertise

Almost all of the tasks associated with a data center relocation are labor-intensive. In many cases, there is a need for additional staff to handle the planning and asset control phase of the move, new staff with particular skills germane to the planning and relocation itself, or an entirely new staff to run a new data center.

As such, staffing expertise issues surrounding data center relocation are an important topic for most companies today.

IT managers were split on their feelings about recruitment of qualified people to staff new data center facilities in disparate locations. “If you’ve got only specialized people and you’re relocating out of state, you’ve got to scramble to



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get people with the same expertise to replace them,” one attendee said. Added another, “I’ve seen companies build a plant in the middle of nowhere because of labor costs, then they can’t get anybody to go there to work, because nobody wants to work in that type of environment.”

A third IT manager brought up the other side of this coin, stating that a company based in New York City could open a data center in Charlotte, North Carolina (or India, for that matter) and recruit the same level of expertise for less money. Still another attendee cited the benefits of a virtual relocation. “I would have the tools and the employees that would allow me and the staff to manage the data center no matter where it was, all with the same people.”

Resources for Your Next Move

Organizations that are planning a data center relocation need to develop a detailed plan of action. Brocade Professional Services can help organizations that are experienced with relocations plan for their next move and recommend the most effective tools. For organizations that need additional assistance, Brocade Professional Services can manage the entire set of network-related activities, from planning all the way through implementation and de-installation.

In addition to its reliable solutions, Brocade offers a full range of specialized services to help organizations in the following areas:

- **Data Migration:** Moving data reliably to make it available where you need it, when you need it.
- **SAN Infrastructure:** Enabling business agility and growth through a robust and flexible data management platform.
- **IP Network Infrastructure:** Optimize IP network infrastructure by deploying highly scalable, highly reliable, and high-performance next-generation network infrastructures.
- **Data Center Virtualization:** Optimize application and fabric performance, improve data protection, and unify management across entire virtual data center environments.
- **Data Protection:** Ensuring that data is safe, secure, and highly available—meeting your business and compliance objectives. ■

YOUR NEXT STEP

Visit <http://www.brocade.com/services> to learn how partnering with Brocade Professional Services can help your organization ease the data center relocation process and ensure its success.

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