SEPTEMBER 2010 VOLUME 4

Enterprise CIO Decisions

Guiding technology decision makers in the enterprise

INSIDE

Data Centers: Owning vs. Outsourcing

Many factors are causing CIOs to wonder which is better: Colocation, cloud computing or maintaining your own data center?

TechTarget
Where Serious Technology Buyers Decide

Whose Data Center Is It, Anyway?

UNLESS YOU ARE Google and have the resources to build your own gigantic data centers, you probably wrestle with the same questions as everyone else: What's the best way to run my data center? Where is the best place to put it? The decisions aren't easy ones in this post-meltdown economy, rife with lingering uncertainty.

Data center colocation became an attractive option as markets fell and budgets disappeared in recent years. Now, as the economy is emerging—albeit slowly—from the downturn, it's turning out that colocation is still a good option, according to CIOs and experts we talked to in this month's *Enterprise CIO Decisions Ezine*.

Inside, SearchCIO.com Senior News Writer Linda Tucci reports that demand has not slowed, forcing some colocation providers to get tough with service plans and prices. "We are seeing organizations that never looked to colocation before, such as city governments, in the market," said Brooke Guthrie, manager of product and business management at CDW LLC. "A lot of organizations that previously would have preferred to spend their own capital and build a $10 million data center are opting for colocation because they are not able to make those investments themselves."

One course of action: Lock in prices now or opt for a higher level of service, which makes the providers happy and is still a bargain for growing companies that have no plans to build out infrastructure themselves.

Colocation services are not for every company, to be sure, as ROI can be elusive. In a state the size of Texas, Tom Gainer, CIO at FirstBank Southwest, based in Amarillo, says it's hard to be close to anything. "Colocation for us did not have the ROI that made it a compelling case," Gainer told Tucci.

Also in this issue, read Laura Smith's article about how some CIOs who choose to build their own data centers are moving toward more modular solutions. In addition, private clouds are becoming the model of choice for companies that want the flexibility of the cloud, but not the management headaches that go along with it. ■

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UpFront

News, views and reviews
for senior technology managers

ON THE JOB

Conference rooms as data centers?

IT DEPARTMENTS looking to provide self-service cloud provisioning would do well to remember the beast unleashed with virtualization. Although virtualization was intended to cut energy and capital costs, it actually increased administration costs "because virtual machines multiply like rabbits," said Dan Weiss, director of IT management advisory services at Unisys Corp. in Blue Bell, Pa.

Automation brings administration costs back to earth, according to Weiss. "IT automation will recoup up to 97% of management costs," he estimated. With 95% of requests to the IT department relying on a standard build, he said, the key is to create software assemblies that push the fine-tuning out to users. However, it's critically important that metrics be built into the software assemblies so IT can properly charge back business units; this will temper the inclination among business units to overprovision, he added.

"Hand over the controls ... change what you're doing," Weiss advised. Provide self-service application deployment to the business users,

Automation brings administration costs back down to earth.

building usage rules into the environment to guarantee fit and function. Provide a self-service environment that allows the business to see the applications in business terms.

Automation relies on policies, the bedrock of business technology and cloud provisioning. James Houghton, chief technology officer at Charlotte,

N.C.-based Adaptivity Inc. (a cloud service provider of Blueprint4IT, which executes cloud programs based on set practices and disciplines), described how one customer's CIO had instituted self-provisioning and caused an explosion in the number of virtual machines. Conference rooms were being turned into data centers, and "the CIO needed a life-changing experience," he said. "You don't want developers doing stuff internally without governance in place."

Experts recommend that organizations establishing policies think of business technology as "IT as a Service." Analysts advise deploying infrastructure services based on real-time demand, because a demand-driven model optimizes the data center, technology, IT processes, people and skills.

"This is not a fad," said Scott Burgess, director of EMC Consulting. "Gartner says that by 2013, cloud computing will be a $65 billion industry globally. Today, it's in the single digits." In addition, Gartner Inc. has said that while virtualization remains the most pressing topic on CIO minds, cloud computing jumped from No. 16 a year ago to No. 2 in 2010. —LAURA SMITH

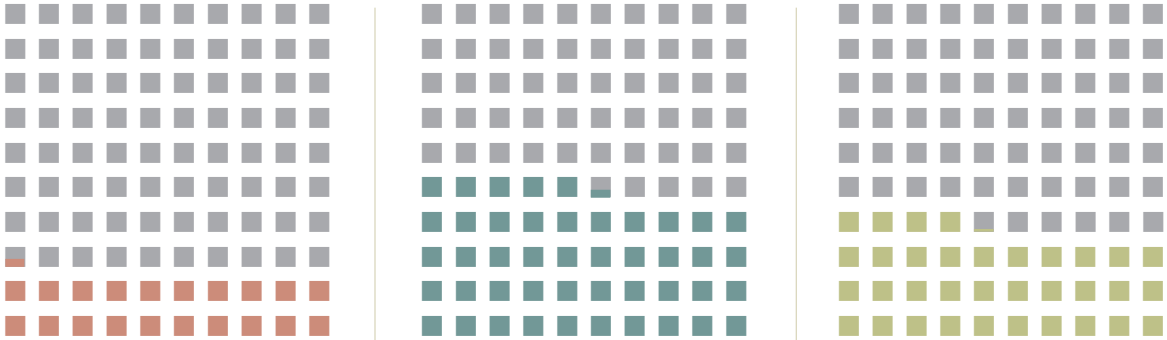
> "Cloud computing has the potential to significantly influence the outsourcing decision. As cloud computing matures, application development and delivery may become more cost effective in the cloud than in the data center and more cost effective than colocation and managed hosting."

TED RITTER
senior research analyst, The Nemertes Research Group Inc.

ON THE AGENDA

POWERING DOWN?

How important is reducing power consumption for your data center?



20.4%
Not a priority

45.45%
Somewhat important

34.15%
Very important

SOURCE: SEARCHDATACENTER.COM PURCHASING INTENTIONS SURVEY, 2010

BY THE NUMBERS

- **In 2009,** 40% of U.S. data centers were facing budget cuts, and 20% of respondents were facing budget cuts greater than 10%.
- **In 2010,** only 20% of data centers are facing any budget cuts.
- **In fact,** 46% of shops are getting data center budget increases.

SOURCE: SEARCHDATACENTER.COM PURCHASING INTENTIONS SURVEY OF 430 IT ADMINISTRATORS, 348 IT DIRECTORS, 271 CONSULTANTS, 115 IT EXECUTIVES AND 79 DATA CENTER FACILITY MANAGERS, CONTACTED BY EMAIL BETWEEN APRIL AND JUNE 2010.

ONE ON ONE

DATA CENTER DESIGN LESSON: MAINTAIN CONTROL

NAME: Stuart Lecky
TITLE: Data center program manager
TIME IN THIS ROLE: Two years

NAME: Michael Johnson
TITLE: Data center enterprise architect
TIME IN THIS ROLE: One year

COMPANY: Commonwealth of Massachusetts
HEADQUARTERS: Boston
EMPLOYEES: 75,000 employees and contractors

IN LATE JUNE, as President Barack Obama was directing federal agencies to consolidate their data centers, the commonwealth of Massachusetts broke ground on a $110 million facility in Springfield, Mass., that will help it do just that: consolidate 183 data centers down to two mirrored facilities housing a total of 4,000 servers at full capacity.

In early 2009, Massachusetts IT and business leaders determined that the commonwealth's massive patchwork of technology—with 100 phone systems, 24 email systems and 15 data networks—was unsustainable, and named IT consolidation as the No. 1 priority in its strategic plan. Supporting the

DYNAMIC DUO: **Stuart Lecky (left) and Michael Johnson helped Massachusetts consolidate 183 data centers down to two.**

consolidation is the new 145,000-sq.-ft. Springfield data center, which will be paired for backup and disaster recovery with an existing Massachusetts Information Technology Center data center in Chelsea, Mass. **Stuart Lecky**, Springfield data center program manager, and **Michael Johnson**, enterprise architect, shared their vision and strategy for the dual data center build-out:

Why did the commonwealth decide to build and maintain its own data centers and not work with a colocation or cloud provider?

JOHNSON: The main reason is for security. With your own data center, you can control access carefully and completely. Some agencies and [our CIO] secretariats also have regulatory requirements for physical separation of data, even from other state agencies. Secondly, one of the primary aspects of the two-data center model is disaster recovery. In the case of a disaster, the remaining data center needs to have the ability

to restore and present all data from the site that is no longer available. Our infrastructure is very complicated, with many systems that have to be replicated. It would be impractical to work with another party to develop recovery scenarios for the systems and meet the recovery time objectives that need to be supported. We need to control the infrastructure in order to create and maintain the redundant systems required.

LECKY: Also, we are under way with Executive Order 510 to consolidate IT resources. The key is the consolidation. We received capital funds through an IT bond, issued by Massachusetts, so the IT organizations are not paying back lease costs or capital debt payments compared to private industry. The selection of Springfield satisfied the geographic diversity requirement of the funding legislation, which called for a site in western Massachusetts, with a separate network, power grid and IT infrastructure.

Michael, in your blog, you mention that the Springfield data center uses Energy Star servers. Could you describe other ways you plan to increase energy efficiency?

JOHNSON: In addition to the facility innovations, the technical infrastructure will help support the energy-efficiency goals. By using new technologies such as 10G Ethernet, we can significantly reduce the amount of cabling, network ports and network devices within the data center. Innovations in storage, such as solid-state drives and auto-tiering, will also contribute to energy efficiency.

LECKY: The facility is designed with many energy-efficient technologies. One of these technologies, air side economizers, utilizes cooler outside air to cool the indoor spaces. The state's division of capital asset management and information technology division have also been working with Western Mass. Electric Co. to maximize potential rebates available through the utility, to lower front-end costs. We expect to cut energy bills by 50%, saving $2 million to $3 million annually. The Springfield site will be one of the state's top consumers of electrical power, at 6 megawatts at full capacity—that's 15% to 20% of the current statewide contract for office buildings. We are working with the green con-

> **"We need to control the infrastructure in order to create and maintain the redundant systems required."**
>
> —**MICHAEL JOHNSON**
> enterprise architect,
> commonwealth of Massachusetts

struction industry and have posted our plans on our wiki.

How is virtualization used in the strategy?

JOHNSON: Virtualization will be the main contributor to energy efficiency. We plan to drastically reduce the number of physical servers through virtualization. By using features of the virtualization software, such as resource scheduling and power management, servers can be powered off and on automatically, as required, while performance can be guaranteed. These features will help achieve high rates of utilization and efficiency.

How will automation play a role?

JOHNSON: We're working on an enterprise automation tools strategy that brings together all the areas of the enterprise that need business services management. This includes event management, asset management, monitoring and more. The Springfield data center will be a lights-out facility, with minimal staffing, so the need for automation is critical. Our long-term goal is to provide services and resources through a virtual private cloud. This will only be possible through careful integration of our tools strategy.

What are the challenges of the consolidation?

JOHNSON: We had to start thinking and planning more from an enterprise perspective. Although we plan to implement best-practice new technologies at Springfield, we have to assure that those systems will be interoperable with systems at our existing data center in Chelsea. We are currently working on our enterprise virtualization project to assure we are ready for things such as replicating virtual machines and other data between data centers. This requires a great deal of planning and coordination. Other enterprise initiatives under way are storage and backup and recovery.

Do you have advice for other organizations consolidating that many data centers?

LECKY: Get an excellent inventory, and develop a repeatable process for your migrations to a virtual environment, from physical machine to physical, physical to virtual, and virtual to virtual.

What aspect of the consolidation are you working on now?

LECKY: [We're] looking at lots of standards for server, storage and networking. We haven't determined all of those, but Fibre Channel over Ethernet is a good one.

JOHNSON: We're working on developing a long-term enterprise storage strategy, exploring and procuring backup and recovery technologies [which comprises a lot of products]. And we're working on the virtualization strategy. —L.S.

To Own or Rent?

CIOs are seeking more modular, green data center designs and considering outsourcing as data center consolidation takes precedence. BY LAURA SMITH

DRIVEN BY THE need to consolidate after massive build-outs in the mid-2000s, enterprises are investing in more modular and energy-efficient data center designs. The question, more than ever, is whether it's better to own or rent.

For Angelo Valletta, senior vice president and CIO at Sun National Bank in Vineland, N.J., the issue came down to control, flexibility and time to market. Valletta has worked in data centers all his professional life, at one time in a full outsourcing model. His mind is open, but when Sun National ran the ROI, it decided to keep its data center and core banking application in-house.

Renting space in an external data center would have been more of a challenge, requiring navigation through an architecture that Sun National didn't own. "Keeping our core banking application in-house allowed the bank to achieve cost savings and the ability to deliver products and services that our customers demand and require," Valletta said.

By creating a mobile banking application that links to in-house systems and leverages the cloud for delivery, the bank was the first community bank to deliver mobile banking to its customers in the markets it serves, according to Valletta.

The bank also leverages its in-house model to build workflow applications aimed at loan origination, for instance, which requires data input from inception to booking. Not only did this give Valletta

greater control over cloud connections, but it also freed him up to think about the business.

"We've been able to dive into true business process re-engineering," he said, "going into a department and having a conversation to eliminate manual redundancies and automate full end-to-end operational processing." Sun National is positioned to sell these types of products, built in-house, to other community banks, which are currently underserved in this area, he said.

One thing is certain: "There is no universal right or wrong answer to the rent-or-own question," said Douglas Menefee, CIO of Schumacher Group, a medical informatics company in Lafayette, La. "This forces us to constantly explore

Technologies En Route to a Mega Data Center

MODULARITY IS PARAMOUNT in the next generation of data centers, experts say. Many IT departments are ordering preconfigured racks of equipment with integrated cabling and switching. Because virtualized servers run at higher utilization levels, they require more bandwidth. Connectivity options are evolving, with Gigabit Ethernet, 10 Gigabit Ethernet and Fibre Channel over Ethernet.

Also fundamental are green initiatives to reduce the heat generated by compressing circuits into ever-smaller units of computing power. Data centers are adopting advanced power management hardware, water-based cooling systems and denser server configurations, making these facilities much different than conventional air-conditioned server rooms.

Server virtualization enables businesses to provision new services more rapidly, storage virtualization is critical for thin provisioning, and on the horizon are automation and management tools that can scale to manage a larger environment, said Bob Laliberte, a senior analyst at Enterprise Strategy Group (ESG) in Milford, Mass. It's still early, "not everything is automated, but companies are putting the pieces together—software, hardware and management—so instead of managing silos, they have an integrated view."

The goal is to build dynamic data centers capable of rapid change to meet market needs. Some enterprises are consolidating into mega data centers that are typically paired and mirrored to a backup site in close enough proximity to maintain data synchronization. With today's bandwidth, that would be about 150 kilometers, Laliberte estimated. —L.S.

options."

Schumacher has two data centers, one in Lafayette and another in Dallas, both of which house more than 150 servers. The company, which provides medical informatics to 2,500 emergency room physicians nationwide, is considering an office relocation in Dallas and has been exploring colocation options.

> "At this time, we are leaning towards keeping the data center in-house. It is very much a dilemma that I continue to grapple with."
>
> —DOUGLAS MENEFEE
> CIO, Schumacher Group

"At this time, we are leaning towards keeping the data center in-house. It is very much a dilemma that I continue to grapple with," Menefee said.

"The value proposition of colocation [is] centered on environmental conditions," such as electricity and heating, ventilating and air conditioning systems, Menefee added. "Doing a colocation solution means that we are paying a premium for those services and eliminating one set of headaches ... while introducing a whole set of new headaches associated with vendor management."

Four years ago, Schumacher went with a dedicated managed hosting service provided by CedarCrestone Inc. for its PeopleSoft environment. "We utilize CedarCrestone for this service and continue to see positive uptime and patch management value," he said.

However, it comes at premium. "With the strong support I have for cloud-based solutions, I'm not seeing the same cost and performance value associated with moving our data center into a colocation solution. It seems to make more sense for us to maintain the data centers in-house and continue to look for colo or cloud-based solutions on a case-by-case basis, rather than shift our existing infrastructure to a colo," he said.

MODULAR REPLACES MASSIVE BUILD-OUTS

"There are a lot of different factors at play," said Bob Laliberte, a senior analyst at Enterprise Strategy Group (ESG) in Milford, Mass. "When you own, you have a lot more control. To a lot of people, that's crucial. They can restrict who gets into the physical space as well as the firewall." The financial industry, for example, is consolidating fast due to all the mergers post-meltdown—but because of sensitive data,

prefers to maintain control.

For the most part, however, the days of building 300,000-square-foot facilities that cost hundreds of millions of dollars and years to complete are over, Laliberte said. "By the time you're in it, the technology is obsolete."

That's one reason why modular, point-of-distribution-based data centers are gaining steam, with offerings from IBM, Sun Microsystems Inc., Hewlett-Packard Co. and others. Instead of a build-out that lasts months (or years), you can order one and plug it in six weeks later. Plus, they're rapidly scalable, Laliberte said. "When you need to scale, you add another pod."

For service providers in particular, the ability to scale is going to be very important. With a modular data center, "You bring it in and bolt it in," Laliberte said. Businesses sometimes put them in a warehouse or other enclosed space, but they can also be placed outdoors.

OUTSOURCING OPTIONS

In late 2006 and 2007, massive data center build-outs were still under way, but "by the middle of 2008, it was done," said Drue Reeves, vice president and director of research at Burton Group in Midvale, Utah. The recession forced the need to consolidate, with server virtualization helping enterprises reduce server count and floor space.

By early 2009, data center consolidation was the No. 1 issue for IT departments, according to a Burton Group survey.

Of 515 senior IT professionals with enterprise and midmarket companies in North America and western Europe, one in three is aggressively consolidating data centers, according to an ESG data center and construction trend survey in which data center consolidation ranked as the third most important enterprise IT initiative for the next 12 to 18 months.

ESG also found that there is still healthy interest in building out new data centers. Nearly one-third of respondents are constructing new facilities, though most are building only a single new data center. Nearly half of the organizations currently reducing or consolidating data centers are also building at least one new data center, Laliberte said.

At some point, CIOs will find a balance between owning and renting, with next-generation data centers likely becoming internal clouds. The trend then will be to build hybrid clouds to augment internal capacity, Reeves predicted. "It's not simply a matter of building new data centers versus buying a bunch of services, but rather to spend [on operations] and focus on the integration." ■

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Lock in Colocation Prices NOW

Demand for colocation is up, and so are the prices, prompting a debate over whether investments in colocation services match the ROI. BY LINDA TUCCI

THE RECESSION HAS been good for colocation providers. The perfect storm, if you will. A scarcity of capital, the rise in high-power-density computing and a need for high-quality redundant data centers have boosted demand for colocation space, according to experts.

"We have not seen a slowdown in interest and growth in colocation. If anything, the recession is driving CIOs to look more closely at colocation," said Ted Ritter, senior research analyst at Mokena, Ill.-based The Nemertes Research Group Inc.

Faced with the worst fiscal crisis in a half century, businesses that under ordinary circumstances would have built their own data centers scurried to find alternatives. Now, colocation space is at a premium, ranging from $700 per month for a low-density power-utilization rack, to as much as $4,000 per month for a high-density rack. And if you want to reserve additional space for growth, expect to pay for it up front, experts said.

In fact, in some markets where demand is high, there are reports that colocation providers are demanding that CIOs move to the more expensive managed services arrangement—or move out. The surprising upshot? For businesses where profits are rising but there are no plans to hire, some industry experts predict the answer will be, "Where do I sign?"

Nor do industry watchers expect the demand for colocation space to wane, at least for the near future.

"We are seeing organizations that never looked to colocation before, such as city governments, in the market," said Brooke Guthrie, manager of product and business management at CDW LLC, a Vernon Hills, Ill.-based technology solutions provider and a major reseller of colocation space.

"A lot of organizations that previously would have preferred to spend their own capital and build a $10

Eight Colocation Factors for CIOs to Consider

REDUNDANCY IS ONE of many factors that CIOs need to consider when researching colocation space, according to Ted Ritter, senior research analyst at Mokena, Ill.-based The Nemertes Research Group Inc.—cost can't be the only issue. In a trend report on data center outsourcing published in the spring, Ritter and colleagues urged companies to weigh eight factors:

1. Risk

The risk tolerance of your organization weighs heavily on a decision to use colocation services. Compliance and privacy concerns are the major reasons enterprises are not moving in droves to cloud computing as a service, according to Nemertes. "If companies are extremely risk averse, they will not even go to colocation. They want complete control," Ritter said.

2. Latency

The challenge is balancing the cost of the provider against the latency requirements of your company. Colocation can help with latency issues, as it does for the company that does business in New York but whose main data center is in Washington, D.C.

"Putting servers in a colo right in Manhattan gets the apps much closer to end users," Ritter said, but it also costs a lot. An extreme example at the other end of the spectrum is Iceland. Verne Global, a new data center facility in Iceland, has fixed energy costs (geothermal and hydroelectric) that are well below those in the United States or Europe. The latency cost, however, is 20msec—too high for real-time trading applications but acceptable for many business applications.

(Continued on page 16)

million data center are opting for colocation because they are not able to make those investments themselves," Guthrie said.

Indeed, California currently utilizes private data centers for colocation, disaster recovery and managed data center services, according to Bill Maile, communications director for the Office of the State CIO.

(Continued from page 15)

3. Capital

Companies with lots of it tend to build their own data centers. For the 85% of organizations that saw flat or decreasing budgets last year, capital expenses were the first cut.

4. Skill Set

Building your own data center requires a complete range of skills, while colocation generally requires fewer. Given the job cuts of the past two years, however, companies may not even have the personnel or ability to hire people with colocation skills. Many colocation providers offer managed services and some now offer operating system and application support.

5. Power

Your company may have the space to expand but not the power. About 30% of organizations with data centers that range from 5,000 to 50,000 square feet are running out of power, according to Nemertes. By 2011, one-third of organizations with 50,000 to 500,000 square feet will be power-starved.

6. Location

This is mainly a cloud issue, but it can be an issue even in colocation if your company winds up in a colo facility in the U.K., where data is subject to European data protection rules.

7. Redundancy

If your organization does not have extra data centers to use for disaster recovery, colocation can be an attractive option, as long as it meets the above criteria.

8. Time

Along with risk, this is the main decision factor. "If organizations can get over the risk, then they have to ask if they have the year to wait to build a data center and put their IT crew through the ringer, or sign a colocation agreement that would allow them to be up and running in 30 days," Ritter said. **—L.T.**

But whether California will continue to use its colocation space is unclear. The state is currently engaged in a significant data center consolidation and modernization effort that will result in a reduction of data center floor space, to the tune of 150,000 square feet, by 2011, Maile wrote in an email.

> "Given that we have pretty much virtualized and are making the investment in MPLS, the colocation was almost a no-brainer."
>
> —TED MAULUCCI
> CIO, Tridel Corp.

That said, "the state regularly assesses its capacity requirements and will continue to consider colocation and other data center services (e.g., cloud, managed services) as part of this planning process," he wrote.

If your organization is leaning toward colocation, don't delay. In a 2010 report on key trends in data center outsourcing, Nemertes' Ritter advised companies to "lock in prices now" for colocation because they "can only go up."

The appetite for colocation space, however, is not driven solely by the economic downturn.

"I am in the process of signing a contract for colocation right now," said Ted Maulucci, CIO of Tridel Corp., a condominium builder based in North York, Ontario, Canada, where the recession was milder and shorter than in other nations.

Tridel recently contracted for new telecommunication services and is moving to a Multiprotocol Label Switching (MPLS) infrastructure. Price was a consideration, but virtualization was the "tipping point," Maulucci said.

"Given that we have pretty much virtualized and are making the investment in MPLS, the colocation was almost a no-brainer, and it could give us many disaster options that we previously did not have," he said, adding that it's also a sound investment for creating a level of redundancy.

A BANK DECIDES AGAINST COLO

For Tom Gainer, CIO and senior vice president at FirstBank Southwest, a regional bank based in Amarillo, Texas, the price of the ticket was ultimately not worth it. FirstBank explored several colocation options before deciding to build its own data center.

"Colocation for us did not have the ROI that made it a compelling case," Gainer wrote in an email.

The bank was looking to consoli-

date its operations into a single facility. When Gainer factored in the cost of adding a data center to the construction of the corporate building, plus the efficiencies expected from deploying the latest infrastructure in that center, "the numbers did not add up," he said.

Gainer said he also had the bank's long-term strategy to consider. FirstBank plans to grow through acquisitions, and having control of its data center operations in the event of a quick turnaround time for merging was an important factor in deciding to build its own facility.

And, yes, location was a factor. "Being located as we are in the panhandle of Texas, travel time and accessibility to a colocation site ... these two factors are a cause for concern."

As for his personal preference, Gainer said he has run operations using both models. For startup companies where capital is at a premium and the footprint of the actual hardware is small, colocation certainly makes sense.

"In a mature organization, you have to run the numbers and you need to understand what is best from an overall strategic standpoint for your organization," he said.

Kick-starting Colocation

NEED SOME GUIDANCE on how to get started on researching colocation? Here are the top questions to ask, courtesy of Forrester Research Inc., a Cambridge, Mass.-based consultancy.

1. **What types of colocation services are available in my area?**
2. **What is the pricing structure of colocation services?**
3. **What is the typical term of a colocation contract?**
4. **Will I have the option to renew my lease at the end of the term?**
5. **What additional services do colocation vendors provide?**
6. **What is the minimum amount of equipment I can colocate?**
7. **Will I be able to choose which network provider I use?**
8. **Will colocation vendors "build to suit" my specific needs?**

THE NEW POWER PLAYER

For colocation providers, demand has remained strong during the past five years, with the exception of 2009, according to Tom Wye, president and CEO of Santa Clara, Calif.-based colocation provider Bay Area Internet Solutions. The company has recently built out 30,000 square feet of an 85,000-square-foot facility.

In his view, connectivity has become a "commodity item." Topping the list of his customer concerns is access to the power densities they require for their computing infrastructure. Ten years ago, an average customer wanted 50 W per square foot. Today, a large customer with a high-density infrastructure is looking for something more like 300 W per square foot.

"What you built 10 years ago versus now is different. A lot of older facilities can't keep up with the demands," Wye said, noting that it's a seller's market for facilities like his.

Customers adding 10 to 20 racks a quarter usually must "carve out a deal" that accounts for expansion during the next two to three years—a "guaranteed ramp." A very large "wholesale" customer that needs half a megawatt of power is allocated the space required for that amount of power.

"They pay for the critical infrastructure for that half a megawatt, and then pay for the power as they use it," Wye said.

> **"In a mature organization, you have to run the numbers and you need to understand what is best from an overall strategic standpoint."**
>
> **—TOM GAINER**
> CIO and senior vice president, FirstBank Southwest

CDW's Guthrie agreed that power, not space, is the currency in colocation. "People are charging for power. You are going to pay by the amount of power, not by the rack space," he said.

And that currency is variable. "It's like buying a plane ticket: You can't get the same price every time." ■

Linda Tucci is senior news writer for SearchCIO.com. Write to her at ltucci@techtarget.com.

PUBLIC *VS.* PRIVATE CLOUDS

Public and private clouds have penetrated enterprises, forcing IT to develop a plan for managing two distinct service delivery models. BY LAURA SMITH

ENTERPRISES ARE USING public cloud services and starting to experiment with private clouds to capitalize on time-to-market and efficiency gains, prompting IT executives to focus on investments and strategy around two service delivery approaches.

By now, most enterprises have begun to use some form of Software as a Service, such as email or customer relationship management, according to Drue Reeves, a vice president and research director at Burton Group in Midvale, Utah.

"They're already doing that, and are rapidly interested in Infrastructure as a Service, which is the fastest-growing segment of the market," Reeves said.

There's less interest currently in Platform as a Service, as pain points persist at the lower levels of the stack in identity management, integration and service-level agreements.

Despite these adoption pain points, new cloud services continue to pop up, such as Business Process as a Service (BPaaS). Forrester Research Inc., for one, has extended the cloud stack to BPaaS as outlined in a new report on the evolution of cloud computing markets.

The most dominant users of public cloud computing services don't work for IT, but for other departments such as marketing and product prototyping, Reeves pointed out. Yet, CIOs and IT departments must formulate a strategy to help guide these users of external services, and

develop an overarching strategy for managing public and private clouds.

"By circumventing IT, [business departments] get their job done faster. If IT continues to ignore this, they'll be circumvented more often," he said. His advice? Help and encourage use: "As with children, it is not effective to say 'don't touch that.'"

MAD (COMPUTER) SCIENCE

IT executives are indeed formulating plans and taking action. "The public cloud forces us to have more compelling services than [users] would find elsewhere," said Dr. Marcos Athanasoulis, CIO of Harvard Medical School (HMS) in Cambridge, Mass.

"HMS is like the land of 1,000 CIOs," he said. "We cannot mandate that people use IT services."

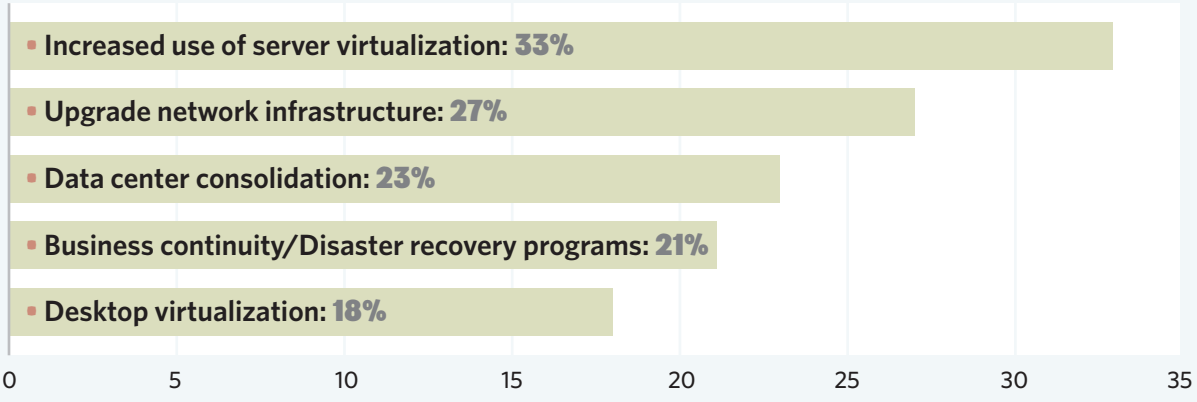
Most people at HMS are trained in life sciences but not IT best practices, he points out. They write their own software but don't know about source control, or they buy a server and stick it under a desk without realizing the power and cooling requirements. Athanasoulis was able to bring the mad computer science under control by articulating a vision for a private cloud that provides measured storage and CPU services.

The nature of biomedical research matches the elasticity of cloud computing services, so Athanasoulis started with a small private cloud, and says it's growing by orders of

BY THE NUMBERS

WHAT MATTERS MOST

What are your organization's most important IT priorities over the next 12-18 months?



PERCENT OF RESPONDENTS: N=515, MULTIPLE RESPONSES ACCEPTED; SOURCE: ENTERPRISE STRATEGY GROUP, 2010

magnitude. The process has unearthed best practices, such as iteration and constant communication.

"How do you monitor that you have enough capacity? Check in with folks along the way a lot," he said. "IT leaders don't hear when things are going well, only when they aren't—and sometimes not even then. If users aren't happy, you run the risk of them doing their own thing."

The truth is, "it's actually very hard to create a cloud internally," said said James Staten, a principal analyst at Forrester Research Inc. in Cambridge, Mass. Staten compares the IT department with a test kitchen in his latest research on converged infrastructures: Enterprises have the basic ingredients to cook up a cloud infrastructure, but there's no recipe and many of the ingredients don't combine well. "Complicating the story are traditional infrastructure silos around

(Maybe Not So) Expert Help

THE COMPLEXITIES OF setting up a private cloud and integrating public cloud computing services have created a market for consultants who claim to know all about it.

Don't be fooled, analysts say.

"Often, these are traditional consultants using traditional approaches and methodologies. Most don't have enough direct experience building clouds," said James Staten, principal analyst at Forrester Research Inc. in Cambridge, Mass. "They're going to be learning on your dime. If you're OK with that because you want to be leading edge, go for it."

At the very least, know exactly what kind of cloud you are seeking, Staten said. Perhaps you want automation, but not self-provisioning, for example, or to share across business units, with or without chargeback.

Along with consultants and system integrators, a new category of cloud brokers has cropped up, prepared to come into the enterprise, figure out the right service and provider, then broker the contract with a better price or terms such as high availability or quality of service, said Drue Reeves, vice president and research director at Burton Group in Midvale, Utah. "But even those guys are not focused on integration so much as management. It's not a turnkey solution," he said.

THE TAKEAWAY: Look at the resumés of the consultants who are going to be brought in. If you want something that really is a cloud, find a consultant who worked at companies that have clouds. —L.S.

servers, networks and storage that must work together in a new, truly integrated way," he said.

The most important point is to understand the value of the cloud over the existing virtual infrastructure, Staten said. One difference is putting new workloads in the cloud and automating maintenance. Another value is self-service, so users can bring things to market quickly. "[The cloud is] a step well beyond the traditional virtual infrastructure," he said. How to get started? "Step away from the high bar, and figure out what to let go."

PUBLIC AND PRIVATE CLOUDS: DIFFERENT BEASTS

Public cloud computing services are more valuable the less often you use them, according to Reeves, who suggested that people think about clouds as they would a rental car on a business trip to Miami. At your destination, you're likely to rent a car, even though the cost far exceeds the daily costs of your vehicle back home. "The reason for that is when you're not in Miami, the bill is zero," Reeves said. With an internal cloud, you're always paying for the whole thing. "To save money, public trumps internal every time," he said.

Even internally, some departments—such as engineering, human resources, marketing—can take their bills to zero, but central IT never can. That's why it's so important for internal clouds to be multi-tenant and as highly utilized as possible, he said.

"If you set up clouds for individual units, you'll always be investing in a cloud with no elasticity. Say the engineering cloud operates at 80% to 90% capacity: If you can convince them to share the resources with marketing and HR on a usage-based metric, the IT delta is solved by other departments," Reeves said.

Because they aim to serve the widest possible customer base, public clouds are highly structured and automated. In most cases, enterprises don't get to set SLA terms.

Because they aim to serve the widest possible customer base at an attractive price point, public clouds are highly structured and automated. In most cases, enterprises don't get to set terms of an SLA. Public clouds have an SLA, take it or leave it. "I always tell clients, 'You adapt to the cloud, the cloud does not adapt to you,'" Staten said. It's a big disconnect for enterprises that are

used to solutions being tailored to their needs, he said.

For example, public clouds establish a standard means of security that meets the needs of as many customers as possible, Reeves said. It's a matter of mastering the

> **"I always tell clients, 'You adapt to the cloud, the cloud does not adapt to you.'"**
>
> **—JAMES STATEN**
> principal analyst,
> Forrester Research Inc.

uneven handshake, and enterprises need to determine what to add to meet their definition of secure. What may be negotiable are terms of service that are more business-oriented, he said, such as being able to sever the service at any time.

As enterprises are forced to embrace the public cloud, the question becomes which applications should be kept internal. The answer depends on an organization's risk tolerance, according to Reeves.

"The more critical the data, the more important it is to keep in-house," he said. "Offload the mundane, not part of the core business." ■

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