An interactive eGuide

THE BENEFITS OF DOING BACKUP IN THE CLOUD

As any IT manager knows, data protection is nothing to mess around with. Lost, stolen or inaccessible data can have significant negative business impact, from tarnished reputations to legal troubles to huge financial losses. Peace of mind is hard to come by for an IT department plagued by perpetual data protection and backup tasks, but online data backup and storage services can help bring it about. In these articles, *InfoWorld* and its sister publications *CIO*, *Computerworld* and *Network World* examine the rising availability and use of cloud-based data backup and storage services.

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Contents

Case Study

Engineering Firm Picks Iron Mountain for Cold Storage

Engineering firm reduces backup costs through Iron Mountain storage service. By Neal Weinberg, Network World

WITH VIRTUALLY EVERY vendor on the planet jumping on the cloud computing bandwagon, sometimes it's difficult to tell whether a service is really cloud or simply a pre-existing offering that has the cloud label slapped on it.

Of course, there's no cloud certification board, no cloud test that a vendor has to pass. So, at this point, it's pretty much anybody's guess as to what constitutes a cloud-based service and what doesn't.

Iron Mountain Digital calls its storage offering, Virtual File Store, "the industry's first cloud-based archiving solution." Virtual File Store is targeted at inactive data, according to Iron Mountain.

Bruns-Pak, a New Jersey engineering firm that designs and builds data centers, uses the Virtual File Store service. Elliott Townsend, manager of information services for the 60-employee company, says the definition of cloud computing is not something he's all that focused on. All he knows is that Virtual File Store is saving him $5,000 a month.

Bruns-Pak is a longtime Iron Mountain customer. It uses Iron Mountain's LiveVault to provide critical backup services and data protection for active data. In the engineering world, projects can last up to two years, so data on a specific project is constantly being backed up over a long period of time.

But once the project is completed, Bruns-Pak might have gigabytes of data sitting on a server. Virtual File Store allows Bruns-Pak to put backed-up data from completed projects into "cold storage" at a fraction of the cost of LiveVault.

Bruns-Pak has cut daily backups from more than half a terabyte to approximately 200GB, and the cost is about one-tenth of the cost of the LiveVault service. Deployment was a breeze. Iron Mountain installed hardware to connect with its storage grid and that was about it, Townsend says.

As with other cloud customers, Bruns-Pak is no stranger to offsite services. The company uses Rackspace to host its e-mail.

Townsend says the issue for him was weighing the cost savings vs. "the comfort level for management." The Rackspace experience, which has been extremely positive, helped create that level of comfort.

As to whether the Iron Mountain service qualifies as a cloud-based offering, Steve Blumenau, vice president of digital archiving technology for Iron Mountain, says any service that an enterprise plugs into over the Internet is cloud.

Iron Mountain has been offering backup services over the Internet for nearly 14 years. The services weren't called cloud, because the term wasn't being used back then. But he says Virtual File Store certainly qualifies – it's a service, it's over the Internet, it can scale up and down, and customers pay per usage.

He adds that when it comes to security, Iron Mountain has a history of protecting both physical and digital data, from its underground data centers protected by armed guards to its strict encryption policies. "We're the most audited company in the world," Blumenau adds.

In-Depth

Cloud Computing: Love It or Hate It?

Is cloud computing the next best thing in IT, or is it overhyped and underdelivering? Here's what both sides of the debate have to say. By Stacy Collett, Computerworld

IT SEEMS THAT IT leaders are warming up to cloud computing, with its promise of elasticity, utility-based billing, multiple storage locations, and the ability to pull data directly from storage devices. In fact, cloud computing ranked second (behind virtualization) as the technology most beta-tested in 2009, according to Computerworld's 2010 Forecast survey of more than 300 IT executives.

But does that mean cloud computing is destined for success? Not so fast, said nearly half of the IT executives polled. They said they are unlikely to try cloud computing this year and ranked it as the No. 1 overhyped and under delivering technology. What's behind this love-hate relationship? We asked people on both sides of the debate.

Puffing up the cloud

For every naysayer, there's another user who can't get enough of cloud computing's benefits.

Cloud initiatives are high on Jessica Carroll's priority list for 2010 at the United States Golf Association. Last year, the Far Hills, N.J.-based USGA signed on with IBM.

"We're able to do online backups nightly into the cloud for our mission-critical data," says Carroll, who is the USGA's managing director for information technologies. "But we were looking for that extra added safety net completely off-site — at a different location, outside of our environment — where if we have a disaster, we can go someplace, set up and get our data back."

But the cloud feature that does the most to help Carroll sleep at night is the e-mail continuity component. "E-mail is probably the lifeblood of what we do. Communication and outreach is who we are. If we don't have e-mail, it's a real kink in our business day," she says. "With cloud backup, if we have a situation where our internal systems go down, we can, through the Internet, flip over to our Web-based e-mail system via IBM, using our own e-mail addresses, and the staff barely would even know what happened."

Now Carroll is eager to take cloud computing to the next level. She'd like to reduce the number of servers in the USGA's data center — it currently has 70 — and try out cloud-based testing and development.

This year, she will be looking at deploying cloud-based test environments that the USGA would pay a monthly fee to use. "[The providers] are responsible for setting up your environment to your specifications. Can they do that in a faster, more economical way than we can internally? I think the answer is going to be yes," says Carroll. "And if this works for the testing and development environment, do these concepts work for your production environment? I'm anticipating the answer is going to be a mix."

She cautions would-be cloud users to study all contracts and scrutinize the hosting vendor's environment and operating procedures. What is its security pol-

icy? What is its disaster recovery plan? Is it willing to share that information with you and put it in a contract?

"This is where I've seen the enterprise-class vendors emerge real strong because they can give you that information and have strong policies and practices they can share with you," Carroll says. "When you are signing with a hosting vendor that is pay-by-month that you found on the Internet — are you going to be able to get that kind of detail? From what I've experienced so far, that answer is no, and for me that's a red flag."

Speedy Solution

The New York State Office of Temporary and Disability Assistance is hoping that cloud computing will help it handle the 30% jump in demand for its services over the past year as a result of record job losses in the state.

> **"Our data center is running out of capacity, and we don't really have enough staff to do the work that we need to get done. So the idea is, can we do something creatively to outsource some of these computing needs?"**
>
> **DANIEL CHAN,** CIO, NEW YORK STATE OFFICE OF TEMPORARY AND DISABILITY ASSISTANCE

"Our data center is running out of capacity," says CIO Daniel Chan, "and we don't really have enough staff to do the work that we need to get done. So the idea is, can we do something creatively to outsource some of these computing needs?" Chan says he would like to use the cloud for application and development testing first, and then possibly offer Web-based applications to users.

The state agency's current technology is at least one generation behind, Chan says, because the need to comply with government policies on security and other matters leads to delays in deployments. What's more, IT costs are higher than they should be because by the time purchases are approved, the technology is dated, but the state is still paying what it cost when it was new.

If the agency did testing in the cloud, Chan says, it could get systems up and running faster because it would be able to quickly set up multiple test environments, allowing many employees to test concurrently — on more current equipment that would be less costly because it wouldn't have the bells and whistles of a production environment. "We don't need that same level of robustness" as in a production environment, Chan says. Right now, "in most cases, we pay for the functionality we really don't need for test and development," he explains.

With cloud computing, the agency can stay up to date technologically, Chan says. He plans to launch the agency's first cloud project in the second half of this year. "If we can demonstrate that we're saving the taxpayers money, I'm sure we can get the procurement agency on board," he says. "From a business perspective, it's a very compelling story."

The American Bible Society uses Amazon.com's cloud services for 80GB to 100GB of Web files, but that's just the beginning, says CIO and Chief Technology Of-

ficer Nick Garbidakis. The Manhattan-based organization plans to use cloud services for some disaster recovery and storage, but Garbidakis says he will move more data to the cloud when servers or equipment needs to be replaced, and he will push out more when bandwidth becomes more affordable for the nonprofit group.

"Any deployment we do, any change of service providers, usually we do it at a time we are ready to retire some five-year-old servers, for example," Garbidakis says. "We would not go out and try to do it while some new servers are deployed already."

The data going to the cloud will be secondary files, "so if it takes an extra second or two to access, it's not a big problem," he says. "I wouldn't push out any of my financial data or primary data right now."

Information technology leaders who want to burst the cloud bubble offer arguments like these: Applications for their industries don't yet exist, they can't justify the cost, or cloud computing just isn't ready for enterprise use.

Garbidakis says he expects to move non-transactional systems to the cloud within a year and more heavy-duty applications to the cloud in five years — "if hardware, software and management costs go down."

Gene Ruth, a storage analyst at Burton Group in Midvale, Utah, says his firm's big clients are interested in cloud computing, but they aren't moving production environments there yet. "I've heard plenty of people try to pick and choose what might be an interesting application for cloud storage," such as archiving or creating access points for contractors in development teams who don't need to use data inside firewalls, he says. "It's an emerging market," Ruth says. "It's not a done deal by a long shot."

Bursting the bubble

Information technology leaders who want to burst the cloud bubble offer arguments like these: Applications for their industries don't yet exist, they can't justify the cost, or cloud computing just isn't ready for enterprise use.

"Cloud computing is a solution looking for a problem. I don't need it right now," says Clarence White, CIO at the Western U.S. branch of The Salvation Army in Long Beach, Calif. One of the largest nonprofit organizations in the world, The Salvation Army has more than 100TB of active data, and its servers process tens of millions of transactions annually. White says he prefers to maintain tight control of his data and likes to have the ability to cross-reference information from different applications. "I haven't yet seen a cloud model that would facilitate my ability to quickly mine my data for business intelligence," he says. "I could be completely wrong, but I haven't seen it."

He also says that cloud computing's other potential uses — as a means of providing scalable storage, safer disaster recovery or more easily deployed test environments — have already been addressed in today's data centers with virtualization technology and storage-area networks.

White says he might consider cloud computing "when applications for my industry type are more mature and when the plumbing is mature enough that it feels as if I

In-Depth

have local access to my data."

"I think it's overhyped," says Melvin Evans, IT director at Hand Arendall LLC, a Mobile, Ala.-based law firm. "It still sounds better on paper than it does in the real world."

He and his firm's business leaders grew skeptical about the cloud after the much publicized outages suffered by Google and other providers of hosted IT services in 2009. What's more, the law firm sees legal holes in many vendors' service-level agreements. "The vendors out there tout 95% to 99.9% uptime, but the way it's worded, there is no way you're going to get credit or reimbursement for a small amount of downtime," Evans says. "When the guarantee is worded with so many loopholes, I'll never be able to see that guarantee enforced."

Mike Wright says that in the heavily regulated financial services industry, strict mitigation requirements make cloud computing unappealing to small and midsize banks like the one he works for.

Beyond, say, a document-imaging application, "I can't think of any application that would benefit us for this type of a medium-size business," says Wright, vice president and IT director at HomeTown Bank, a community bank based in Roanoke, Va. "There are certain things that we could virtualize, but we would have to have control over and ownership of the hardware. It circles back around to risk mitigation."

Cloud computing may seem overhyped because so many marketers are jumping on the bandwagon. "To make it seem bigger than it is, many people are including everything they can in [the term] cloud," says Michael Peterson, president of Strategic Research Corp., an IT research and consulting firm in Santa Barbara, Calif. He says he thinks of true cloud computing functions as pre-existing grid-style compute-and-storage services, tightly coupled remote compute-and-storage services that are remote but look local, and hosted computing services.

Functions that shouldn't be considered cloud computing, says Peterson, include remote delivery of everyday data center services such as replication and disaster recovery, routine Web 2.0 services, application service providers' offerings and social networking.

Deciphering the meaning of the term cloud would help the industry "get a handle on adoption," he adds.

Collett is a Computerworld *contributing writer.*

In-Depth

Managing Data Transfer to Cloud Storage

IT managers grapple with moving large stores of data into the cloud. By Stacy Collett, Computerworld

JEFF KUBACKI, CIO at Kroll Inc., set a goal for the risk management consulting firm Kroll Inc. to reduce its storage costs by 25% over the next three years. With some 13 petabytes of stored data to date, Kubacki plans to attack the problem with a mix of tiered storage, business process changes and newer options — including cloud storage.

Though in its infancy, cloud storage seems like an attractive option, with its elasticity, utility-like billing, multiple storage locations and ability to pull data directly from the storage device. But the cloud is still uncharted territory when it comes to sending large chunks of data through the ether.

"Cloud is one of those things that we've been talking to our vendors about to see when it might make sense for us to put our toe in the water," Kubacki says. "We're still just figuring out if it's going to be right for us."

Kroll's IT architects will be investigating ways to migrate about 25% of the risk assessment firm's eligible data through its Internet "pipes" and into the cloud. (The majority of data, mostly legal discovery documents, is considered too sensitive to store in the cloud, Kubacki says.) While storage capacity in the cloud is expandable, limits in the capacity of network connections to the cloud can create challenges for enterprises with multiple petabytes of data to move back and forth.

Enterprises are asking whether their pipes are big enough to transfer their stored data to the cloud, and often, the answer is no. "The latency is the big inhibitor for what you can use [cloud] storage for," says Adam Couture, an analyst at Gartner Inc. "Right now, for enterprises, we see the [use restricted to] archiving, backup, maybe some collaboration."

But most cloud providers say there are easy ways around capacity issues when migrating data to the cloud — starting with the physical migration of the initial data to the data center location.

It's relatively easy to host and transfer large amounts of data from a day-to-day, user-level perspective, says Rob Walters, general manager of the Dallas office of cloud hosting company The Planet. But moving 20TB to 25TB of data in a chunk continues to daunt current systems. "The networks that we have [today] just aren't good at it. It's just a weak point right now, and everybody is looking at dealing with that," Walters says.

For enterprises, the "initial ingestion" of backup data to the cloud can be done by copying data to the cloud over a WAN or LAN link, but "that initial backup, depending on how much data you have on your server, could take weeks," Couture cautions.

Doctors' offices that hire Arvada, Colo.-based Nuvolus to create private cloud storage for their sensitive patient data don't like data to be copied and physically taken out of their offices, says Nuvolus CEO Kevin Ellis. So the company requires its health care industry clients to have "a decent Internet connection" — typically 10Mbit/sec — to transfer the back-

up data over the pipes, says Ellis.

"Depending on the office, we could be looking at pretty long upload times," he says. "You're uploading overnight. We're trying to make sure we're not impacting the doctor's office during the day as well."

Private Pipelines

Some vendors also offer private connections established from the enterprise to one of the provider's storage nodes. This is well suited for companies with initial data sets between 2TB and 75TB, or fewer than 750 million files, and where data transfer is time-sensitive, according to Nirvanix Inc., a San Diego-based cloud storage provider. It also works well for one-time and ongoing data migration that requires high throughput and moderate latency.

The other option — most often used by enterprises — is the "sneakernet" approach, where data is physically picked up from the customer on a disk, tape or appliance provided by the cloud storage provider, and taken to the data center for initial backup.

The other option — most often used by enterprises — is the "sneakernet" approach, where data is physically picked up from the customer on a disk, tape or appliance provided by the cloud storage provider, and taken to the data center for initial backup. "We've had customers that have shipped storage arrays," says Jon Greaves, chief technology officer at private cloud host Carpathia Hosting Inc. in Ashburn, Va. "In some cases, customers have physically removed disks from the chassis after they have been mirrored, and delivered those."

Nirvanix, for instance, will send its customers storage servers with dual Gigabit Ethernet ports to transfer data within their own facilities. Once the data is transferred, the servers are sent back to Nirvanix and the data is migrated to the cloud.

Amazon Web Services LLC supports moving large amounts of data into and out of its cloud using portable storage devices. It uses a high-speed internal network to transfer customer data directly onto and off of storage devices, bypassing the Internet.

Greaves has seen large companies use both the Internet and sneakernet methods for data transfer.

Carpathia builds private clouds for its enterprise customers based on technology from ParaScale Inc. "It depends on how quickly they need to see data up and running, and the use of the data. If it's long-term archiving, it's typically a more gradual migration of data," he explains. "If they need video files for immediate use, and it's tens to hundreds of terabytes, that's the time we start looking at alternative methods."

After that initial transfer, Internet bandwidth will rebound because only blocks of data that have been changed are added to the backup.

There is no such thing as ultimate scalability or infinite capacity in the cloud, Walters says. It's the provider's responsibility to plan capacity, manage delivery of future storage and stay ahead of demand. "If someone is going

to upload 10-plus terabytes [of data], you know about that in advance, and it's a carefully orchestrated exercise," he says.

Storage providers use sophisticated methods for capacity planning. Carpathia, for instance, constantly pushes traffic across its network at about 450Gbit/sec to 500Gbit/sec and plans for capacity changes using algorithms borrowed from the telecommunications industry.

"You have a T1 line and have to figure out how many core minutes you can squeeze through that T1 line, which is really an overprovisioning problem," Greaves explains.

Telecom companies also use a unit of measure called an erlang, which describes total traffic volume in one hour, to help determine where they are in the provisioning cycle. "We use exactly the same approach on our cloud," Greaves says. "We can figure out that we're at 1.2, and at 2 we're going to have capacity challenges. So when we hit that 1.2 threshold, that's when we order more hardware."

For Kroll, a cloud storage decision can wait. "I never like to be on the bleeding edge. [But] I don't mind the leading edge," Kubacki says.

But he adds that cloud storage will still be an attractive option next year. "I think one benefit of moving to the cloud would be the whole concept of it being more of an expense transaction versus a capital transaction," Kubacki. "Today I have a large capital budget; I'm buying my disk and depreciating it over a number of years. So I'm kind of shifting what my P&L looks like by having some of that data in the cloud. I'm not actually buying storage; I'm almost renting it."

Resources

Cloud Data Protection for Midmarket and Midsize Enterprises

Even the most skeptical are looking to leverage cloud-based data protection services recognizing they can save both administrative time and capital budgets if they migrate.

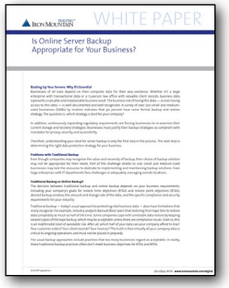
On- and off-premises data protection solutions offered by companies like Iron Mountain provide a way to ease into the cloud for midmarket and midsize enterprises looking for an alternative to tape-centric backup and recovery. Read this paper to learn why lower disk costs and bandwidth-optimized data transfer are fueling disk-to-cloud (D2C) and disk-to-disk-to-cloud (D2D2C) strategies for server backup.


Iron Mountain LiveVault: Cloud Data Protection for Midmarket and Midsize Enterprises

Learn more >

Is Online Server Backup Appropriate for Your Business?

Read this white paper to examine the setbacks of traditional backup, gain a better understanding of online backup, and discover why Iron Mountain's LiveVault solution for automated server backup and recovery won the 2006 award for Best Storage Software Solution from the Software and Information Industry Association.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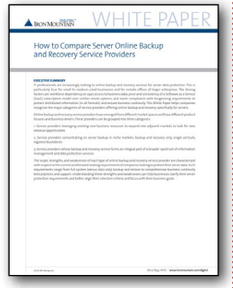
How to Compare Server Online Backup and Recovery Service Providers

IT professionals are increasingly looking to online backup and recovery services for server data protection. This white paper helps companies recognize the major categories of service providers offering online backup and recovery specifically for servers.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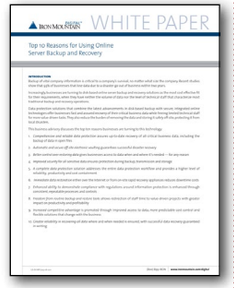
Top 10 Reasons for Using Server Online Backup and Recovery

Data protection solutions that combine the latest advancements in disk-based backup with secure, integrated online technologies offer fast, assured data recovery. This paper discusses the top 10 reasons businesses are turning to this technology.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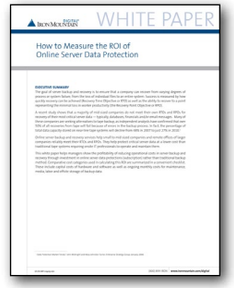
How to Measure ROI for Online Server Backup and Recovery

Show the profitability of reducing operational costs in server backup and recovery through investment in online server data protections rather than traditional backup methods. This paper includes a checklist of comparative cost categories used in calculating ROI.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