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The Essentials Series: Strategies for Cloud Storage, Data Protection, and Disaster Recovery

What Can Cloud Storage Really Do For You?

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by Don Jones

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by Don Jones, Series Editor

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What Can Cloud Storage Really Do For You?

How long would it take you to recover your company's most critical data from your most recent backup tapes? Surprisingly, many companies don't know—and if they did, they'd probably be troubled. We've conditioned ourselves to accept the limitations of old-fashioned backup schemes and technologies, without realizing that better techniques have come along that better meet our business needs. The advent of cloud computing, and particularly cloud storage, now offers us the ability to create a *hybrid IT* model that really solves our business needs—and gets us back online faster in the event of a disaster. In fact, this new model of cloud storage can help address some of the problems with our entire storage plan—not just backup and recovery.

Three Business Needs Your Current Storage Plan Doesn't Meet

Ask most companies what their backup plan involves, and they'll probably say, "Backup tapes." Magnetic tape has been the primary medium for backups since the 1970s. Some companies store their backup tapes on-site, while others will smile knowingly and say that *they* send their tapes off-site for safekeeping. Nobody realizes, however, that those tapes aren't meeting their business needs.

The same thing applies to our storage plans in general: Just dumping everything on a file server in the office doesn't actually meet all of our business needs. We need to really examine those business needs, and look for ways to meet them, going beyond what we've done with storage for so many years.

Backup Windows

Tape backups usually consist of a snapshot of your data, taken during some kind of backup or maintenance window—usually at night. Any data that's changed or been created since the last tape backup is always at risk until the next backup is made—meaning we're potentially going to lose a day or more of critical data if a problem occurs.

This limited-time backup windows place restrictions on what we can back up, too: We can only protect as much data as we can cram onto a tape (or set of tapes) during the backup window's duration. We're constantly longing for faster tape drives, bigger tape cartridges, and faster transfer times so that we can grab more data during that precious window.

Cloud storage proposes to change the way you create and use backups by storing your data in highly-protected data centers *outside* your own facility—meaning your data is always safely backed up off-site, without any effort on your part.

Time-to-Recover

When we actually need to use those tape backups, we're left to sit and wait while data slowly streams off tape—while our business is losing money because we *need* that data. This is actually the biggest problem with old-fashioned backup techniques and storage plans: Tapes make for a safe, easy-to-carry form of backup, but they take *forever* to actually use when you need to recover data.

With cloud storage, there is much less time required to recover. Cloud storage vendors build highly-available, highly-redundant storage vaults so that your data is simply there when you need it, all the time.

Storage Utilization

How well do you actually utilize all that storage you've paid for—and that you pay to protect? Having a lot of extra storage lying around is like having an empty room in your house—it begs to be filled, and once you do, you'll have to manage it. Many companies place tight restrictions on what kind of data goes onto their storage, because they know they'll have to back it up—within that limited backup window. Restrictions mean that your storage isn't doing everything for you that it could, simply because you feel constrained to only store what you know you can protect.

Cloud storage helps to remove those constraints. You won't run out of backup storage, and you'll feel better about actually utilizing your storage because you know it'll be protected.

Business Drivers for Storage, Data Protection, and Disaster Recovery

No backup storage limitations. Faster recovery. Less infrastructure to maintain. Better storage utilization. Those are some of the main business needs that drive businesses to reconsider their storage plans, but there are other drivers, too.

Data Accessibility

Today's businesses don't run entirely out of the office. Employees work from home and on the road. In the event of a disaster, the entire company might need to pick up and relocate. Your storage plan should allow your data to be available anytime you need it, *wherever* you need it, without complex and expensive remote-access schemes. Your data should be safe, secure, private, and protected—but available in an instant from anywhere on the globe, if you need it.

Think about it: Being able to access your data from anywhere can solve a major problem that smaller companies have with disaster recovery: The need to plan for a disaster that involves your entire office or data center. Off-site recovery facilities are often expensive, and you're down for hours or days while you restore your data to the facility's servers. But if you could make your critical data available from anywhere, any time, then *anyplace* could become your off-site recovery facility. That's what cloud storage can offer.

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Downtime *Really Does* Cost

Don't underestimate how much money you're losing while you're waiting for your data to be recovered from old-fashioned backup tapes. In business, time really is money, and when employees are waiting for data to be restored, you're not only wasting their time—and your money—you're also missing business opportunities, losing customers, and failing to succeed.

We've long *accepted* the fact that restoring data takes a long time because in the past that was simply the best we could do. But this isn't the past, and we don't have to automatically accept anything less than instantaneous access to our data. Cloud-based storage can offer that instantaneous access.

Be Strategic, Not Reactionary

The time to prevent your storage and data protection plan from being a failure is *before* a disaster occurs. You can't come up with a better storage plan in the face of a crisis; you have to pull some time out of your busy schedule *now,* and be strategic about your company's storage needs and data protection capabilities. You need to understand your business needs and evaluate new technologies—like cloud storage—and understand how they can help you craft a storage and data protection plan that really meets those business needs.

Planning for Cloud Storage

Cloud storage proposes that your store your data—at least some of it—in someone else's data centers. You might be storing a backup copy there, or you might be storing your actual live data there—it depends on your precise business needs. Once it's in the cloud, protecting your data is no longer your problem; it's your storage vendor's problem. Your data is simply available to you, all the time, without waiting, from anywhere with an Internet connection. The trick is in properly planning to utilize cloud storage as part of your total storage and data protection plan.

Identifying and Sizing Critical Data

It's probably reasonable to assume that not all your data is mission critical, and not all of it is in need of enhanced protection and faster—or instant—recovery in the event of loss or disaster. Cloud storage vendors commonly charge for the storage you use, so you'll want to begin by identifying the data that you want to protect in the cloud. Once you've identified your critical data, figure out how big it is. That will help you figure out how much cloud-based storage you'll need.

Identifying the Cost and Probability of Downtime

Cloud storage isn't free, of course—at least, not the kind of protected, secure cloud storage that you'll need. In order to weigh the costs and benefits, you'll need to have some idea of how much downtime actually costs you. Imagine that all the critical data you identified is suddenly gone, and your only hope for getting it back is that set of backup tapes in the trunk of your IT administrator's car. While you're waiting to see if those backup tapes really work, how much money are you losing? You also need to judge how likely it is for this situation to occur. How easily can data be lost? It doesn't have to be a meteor strike on your office; disasters can happen with the click of a "Delete" button by an incautious user.

Fitting the Cloud Into Your Infrastructure

So how does cloud storage fit into your current storage plan? There are actually several approaches and variations, which you'll learn more about in the third article in this series. Briefly, though, you can choose to:

- Keep all of your data in the cloud, and access it directly from there. This option provides great protection but requires solid, reliable connectivity to the cloud so that you'll be able to get to your data.

- Use the cloud for backups. Rather than backing up to tape, back up to the cloud. This method ensures that your backed-up data is available for instant use when you need it, but keeps your "live" data locally where it's easy to get to even if your Internet connection is down.

- Create a hybrid storage plan. There are numerous variations to consider, some of which include keeping your "live" data in the cloud and a "backup" copy locally in case your Internet connection fails. You may also choose to treat different categories of data differently, keeping the most critical data live in the cloud, where it's protected.

Optimizing Bandwidth and Storage

How will you get all your data into the cloud in the first place—and what's it going to cost to store it there? There are a few techniques and technologies that can help. *Compression* and *de-duplication* go a long way toward reducing the bandwidth needed to upload your data to the cloud and keep it up to date; some vendors claim up to an 80% reduction in data size through a combination of compression and the elimination of duplicate data segments. *Bandwidth throttling* helps ensure that your Internet connection isn't taken over completely by data uploads to the cloud, reserving as much bandwidth as you need for your production needs. And, once the data is in the cloud, compression and de-duplication help reduce its size—reducing the storage costs for you.

Rethinking Disaster Recovery

Storing your data in the cloud opens up fantastic new techniques for disaster recovery. Lose a server? No problem—your data is already in the cloud, and can be used to spin up a virtual machine in the cloud, too, duplicating your server's functionality until you can get a replacement running. A disaster takes your entire office out of commission? Again, no problem: With your data in the cloud, all your critical servers can be brought online as virtual machines, and made accessible to your employees working at one or more alternative locations. This model is called a "warm site" recovery, meaning your recovery site—which is in the cloud—has copies of your data ready to go the minute you need them. Compare that to a "cold site" model, where you basically have to show up with your old-school backup tapes and start restoring them, and you'll realize how much faster and more efficient the cloud-based model can be.

A good cloud storage vendor will help you get your own servers back online more easily, too. You shouldn't have to pull an entire server's worth of files and data down over your Internet connection; the vendor should be able to ship you tapes, optical media, hard drives, or other bulk-storage media so that you can get your servers up and running more quickly. Combined with "warm site" recovery models, you'll get minimal downtime, and the ability to get your own data center back online as quickly as possible.

Cloud Storage: Pure Strategy for Storage and Data Protection

Cloud storage models offer significant advantages over the old-school backup techniques we've been using for years. In the next article, we'll explore some of the specific considerations and special challenges that cloud storage needs to address, and consider some of the vendors that are making this space a reality. In the final article of this series, we'll look specifically at practical strategies for cloud-based storage and disaster recovery, including specific models and some of their pros and cons.

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