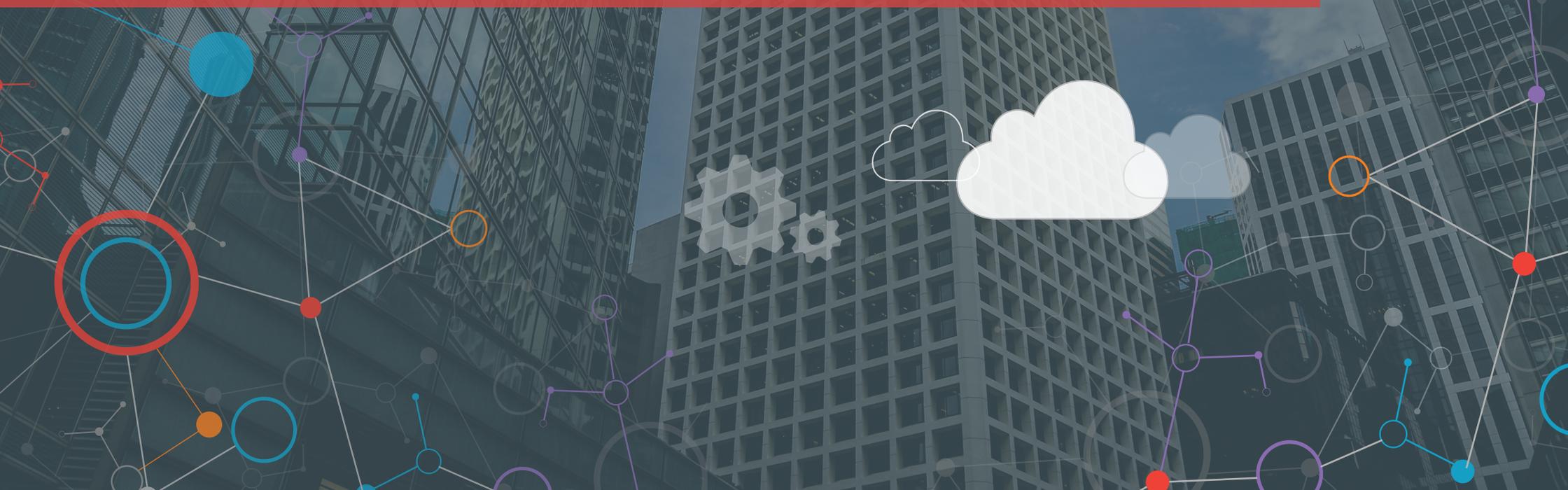




THE ULTIMATE CLOUD-CONNECTED APPLIANCE BUYER'S GUIDE

9 Questions to Ask When Evaluating Options





Hybrid cloud backup solutions will grow at a compounded average growth rate of more than 80%.^a

TANEJA GROUP
TECHNOLOGY ANALYSTS

Introduction

Most businesses recognize the importance of data management, backup and disaster recovery, but lack the right backup solution to meet their business needs.

According to Gartner, only **35%** of small and medium businesses have backup plans and **70%** aren't confident with the following statement, 'Our backup and disaster recovery operations are well managed and planned.'

This is a yesterday's backup and it's a risk that enterprises and SMBs can't afford. What would an hour of downtime cost your business?

The average cost of downtime, according to IDC research is at least \$20,000 per hour or more for **80%** of the companies surveyed. A significant minority (20%) put the cost per hour of data loss at \$100,000 or more. And according to the Institute for Business and Home Safety, an estimated **25%** of businesses never reopen following a major disaster.

Data Growth Challenges

It's a different world for IT managers today and data backup is more complex than ever. As data sizes and types increase, and servers and operating systems change, companies are spending more on data protection, both in terms of IT resources and real costs.

Forcing the heart-to-heart with their current solution, forward thinking leaders are turning to hybrid cloud backup solutions to alleviate data growth challenges, drive backup efficiency, and increase cost savings.

Are you ready for Tomorrow's Backup?

So where to begin? Navigating the crowded hybrid cloud backup market appears daunting but it doesn't have to be. This buyers guide will help you define what tomorrow's backup should look like and give you the top questions you can use to assess a next-gen hybrid cloud backup solution. Let's get started, shall we?

Why is yesterday's backup failing?



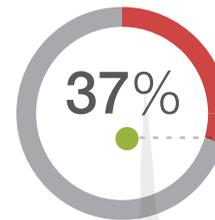
40%

IS THE YEARLY PROJECTED DATA GROWTH RATE, CAUSING COMPANIES TO ROUTINELY MISS THEIR BACKUP WINDOWS. ^b



98%

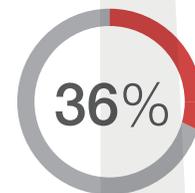
OF ORGANIZATIONS CAN'T GO MORE THAN 1 DAY WITHOUT CRITICAL DATA. ^c



OF COMPANIES SURVEYED HAVE TO COME TO TERMS WITH VIRTUAL, PHYSICAL AND CLOUD-BASED SERVERS. ^d

54%

OF THE SAMPLE GROUP HAVE TO MANAGE TWO OR MORE HYPERVISORS. ^d



OF COMPANIES DO NOT BACK UP VIRTUAL SERVERS AS OFTEN AS THEIR PHYSICAL SERVERS. ^e

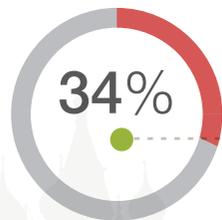
Please see page 22 for the sources of the above statistics.

The Current Backup Landscape

The rising popularity of hybrid cloud backup is being driven by its smarter use of technology and cost efficiency, but also lies in the challenges with traditional backup methods. Let's explore the current landscape of popular methods and their inherent drawbacks.

TAPE BACKUP

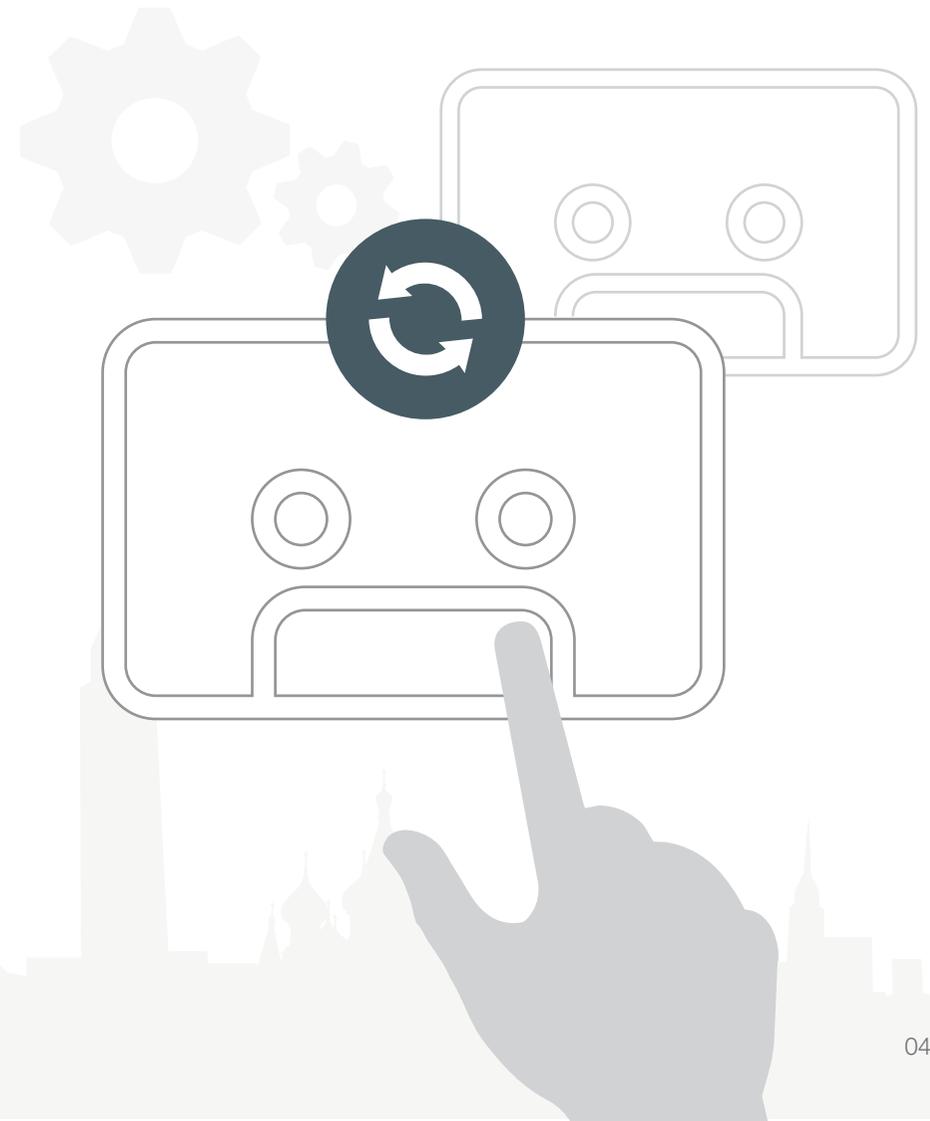
Tape-based backup is the oldest form of data backup available to businesses, and while it offers cost effective scaling, it can be difficult to manage day-to-day and requires a significant investment in backup network architecture. Compared to other backup methods, backup and recovery times are significantly slower with tape. The biggest drawback is the high recovery failure rate, which is due to their fragile nature – they can be dropped, mishandled, and are prone to deterioration (that means they aren't in it for the long haul).



OF COMPANIES TEST THEIR TAPE BACKUPS.^f

77%

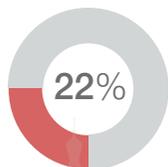
OF COMPANIES THAT TESTED REPORTED FINDING FAILURES.



DISK-BASED BACKUP

Disk-based backup solutions use a variety of disk storage units to hold backups of your data. The most popular forms of disk storage used are hard drives or optical disks. Because these systems use more modern storage methods, backup and recovery is quicker than with tape systems. And disk can be more reliable, especially if you take care of your backup systems and the disks the backups are stored on.

Since it does not need to be streamed like tape does, a non-optimal network won't adversely impact performance. Features like deduplication and compression have made the use of disk much more affordable, but there are still finite capacity constraints associated with disk-based appliances. So, if you need more storage, you need to buy another appliance or upgrade your storage capacity.



OF HARD DRIVES WON'T LAST FOUR YEARS.⁸

New features like changed block backups, recovery-in-place, and changed block recovery are additional benefits of disk-based backup.

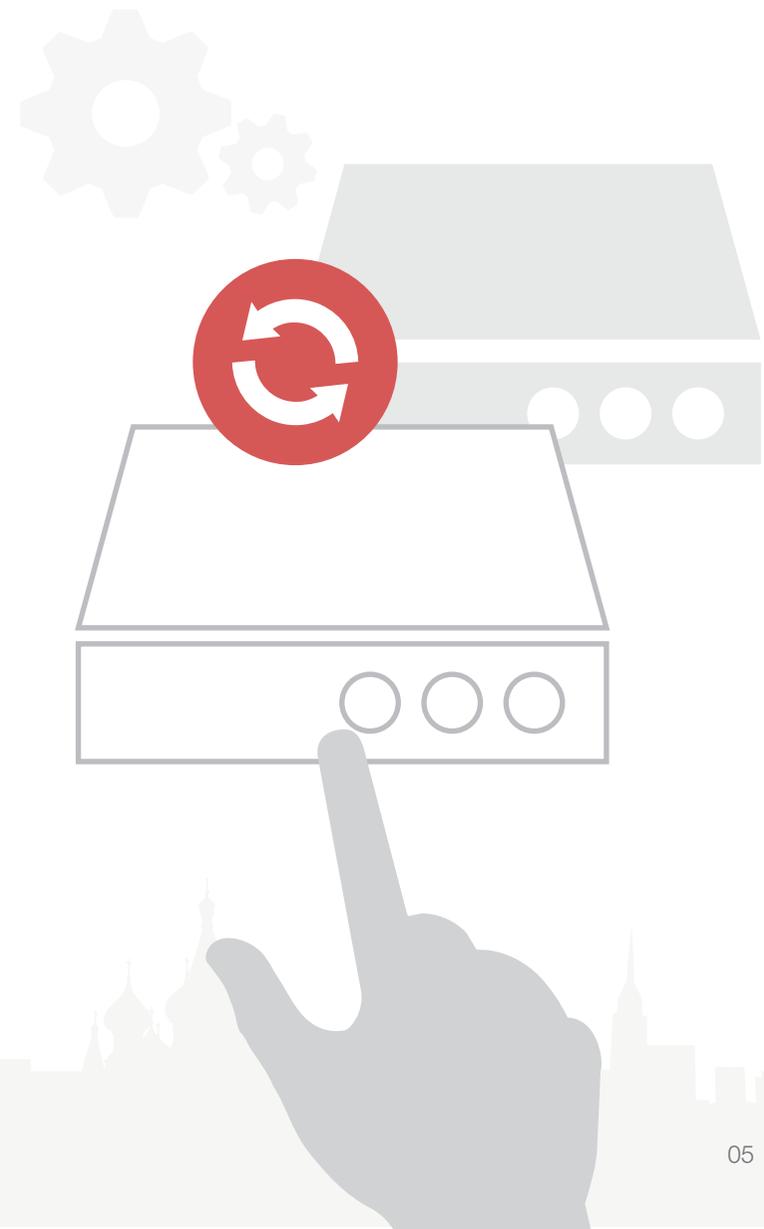
Disk-based backup challenges

Since disk-based systems rely on hard drives or optical disks, there is always a chance that your backups can be lost, damaged, or stolen.

To mitigate this risk, many companies have duplicate systems and back up to different devices, which are kept off-site. This redundancy helps ensure that your data is available, but it can be expensive to purchase multiple backup solutions.

Is disk-based backup scalable?

While disk is ideal for the most recent copies of backup, it can be difficult and expensive to scale for the long-term retention of data. The cost to power and cool as well as allocate data center floor space to the disk backup appliance can end up being a sizable expense. And there is the issue of making sure that there is a secondary site available in the event of a disaster.



CLOUD-BASED BACKUP

Cloud backup utilizes off-site technology to host your backups. Businesses of all sizes work with cloud backup providers to host the servers and connect via a network connection to backup their data.

A major benefit of using cloud backup is that it makes managing a backup system easier. Data moved offsite is typically deduplicated and protected by encryption. The service provider can use an initial seeding option to speed up the first cloud backup. Seeding works by placing the initial backup on an appliance and sending it to the provider to upload. After that, only incremental changes get backed up to the cloud.

The biggest advantage of cloud backup systems is that they are more affordable and don't require local data systems and upkeep. Cloud systems are also less labor intensive because they can be managed by your IT partner.

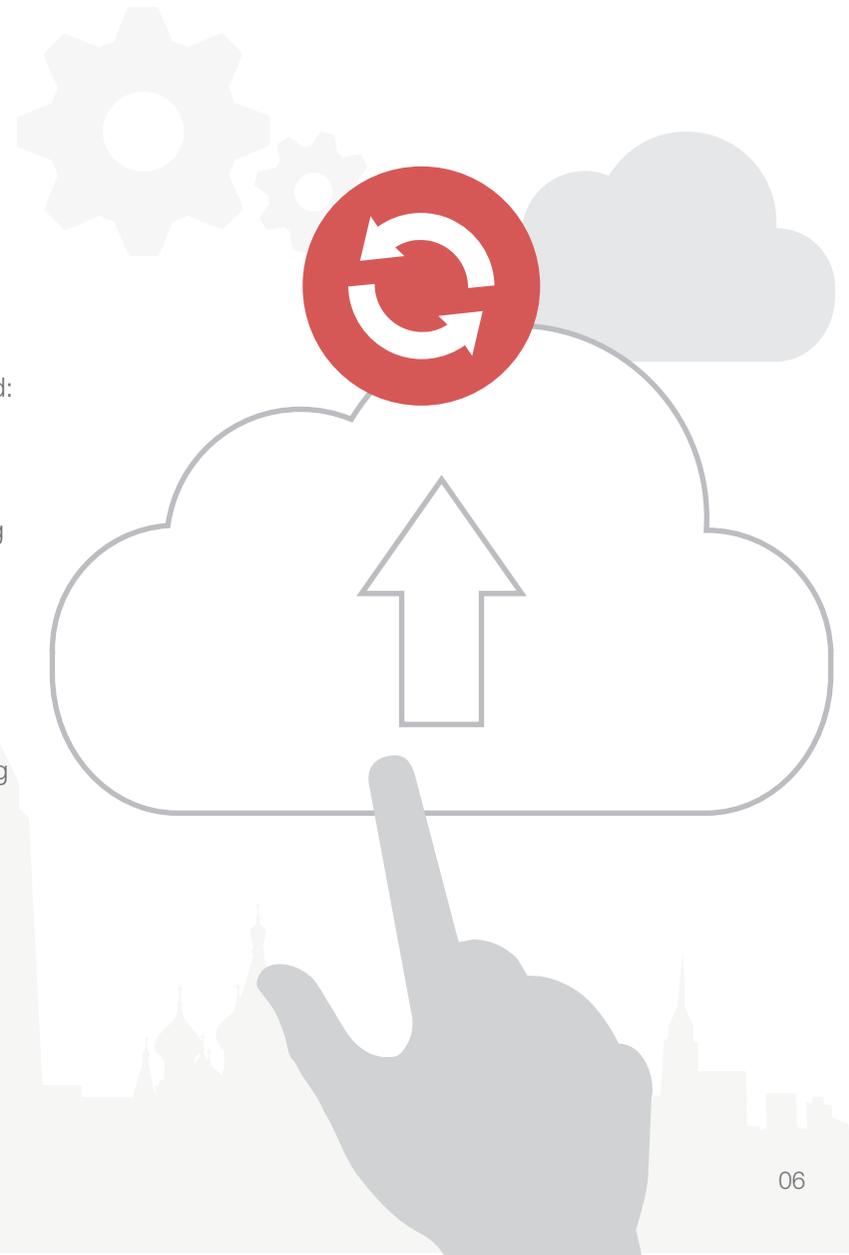
Challenges with cloud backup

Backup and recovery can take longer with the cloud. Depending on your internet connection, you can usually restore your system in a matter of hours.

These additional factors should also be top of mind:

- Requires a faster bandwidth if you want to backup while working.
- Direct-to-cloud replication takes time depending on the amount of data to be protected.
- With an average internet connection (25 mbps), it would take a company four days to replicate five terabytes of data.

This places a practical limit of cloud-based replication to about three terabytes per day, making it impractical for larger companies looking to protect larger datasets.



Snapshot of Current Backup Methods

TAPE BACKUP

PROS

- Easy to learn
- Meets compliance mandates
- Portability

CONS

- Difficult to manage
- Expensive infrastructure
- Susceptible to media failure
- Unreliable
- Time-consuming to recover

DISK-BASED BACKUP

PROS

- Supports large data sets
- Data sovereignty
- Quick recovery
- Backup to many locations

CONS

- Capacity planning
- Expensive
- Hardware failure risk
- Difficult to manage multiple appliances
- System updates

CLOUD-BASED BACKUP

PROS

- Inexpensive cloud storage
- No system maintenance
- Data mobility
- Easy deployment
- Central management

CONS

- Data upload time
- Slower recovery
- Data leaves your network
- Vendor security concerns

What is Hybrid Cloud Backup?

A hybrid cloud backup solution leverages the benefits of an on-premise appliance and overcomes many of the traditional shortcomings and latency issues of cloud-based backup. Emerging in the industry are two categories of hybrid backup: **appliance-centric and cloud-centric.**

These hybrid solutions simply integrate with some existing backup platforms and add the cloud storage as an alternate target.

These solutions are the most common in the market and have been created by traditional backup appliance manufacturers like EMC, Commvault, and Unitrends.



These hybrid solutions offer an on-ramp gateway appliance to public cloud providers.

The appliance functions as a local cache that provides local storage for your mission critical data in the environment while streaming all data to the cloud – making the cloud an archive.

With recent studies indicating that 90% of data in your network can be considered reference data, with minimal need to be accessed, the cloud is a more affordable and efficient repository for long-term storage.

Cloud-centric hybrid appliances can give you the protection and cost efficiencies of cloud storage with LAN access to critical data.

How Do Hybrid Backup Solutions Work?

Hybrid cloud backup promises to solve the latency issues of cloud-only backup and the scaling issues of an on-premise disk-based backup appliance strategy. Typically a hybrid cloud backup solution consists of an on-premise appliance that has enough capacity to hold several full backups, and the incremental backups that would be created between those fulls. The hybrid appliance becomes the point of first restore, since it is disk-based and on-site.

The key difference between disk backup and hybrid cloud backup is what happens after the backup is complete. The hybrid systems add an extra step and replicate backed up data directly to the provider's cloud or to a public cloud provider like Amazon Web Service or Azure.

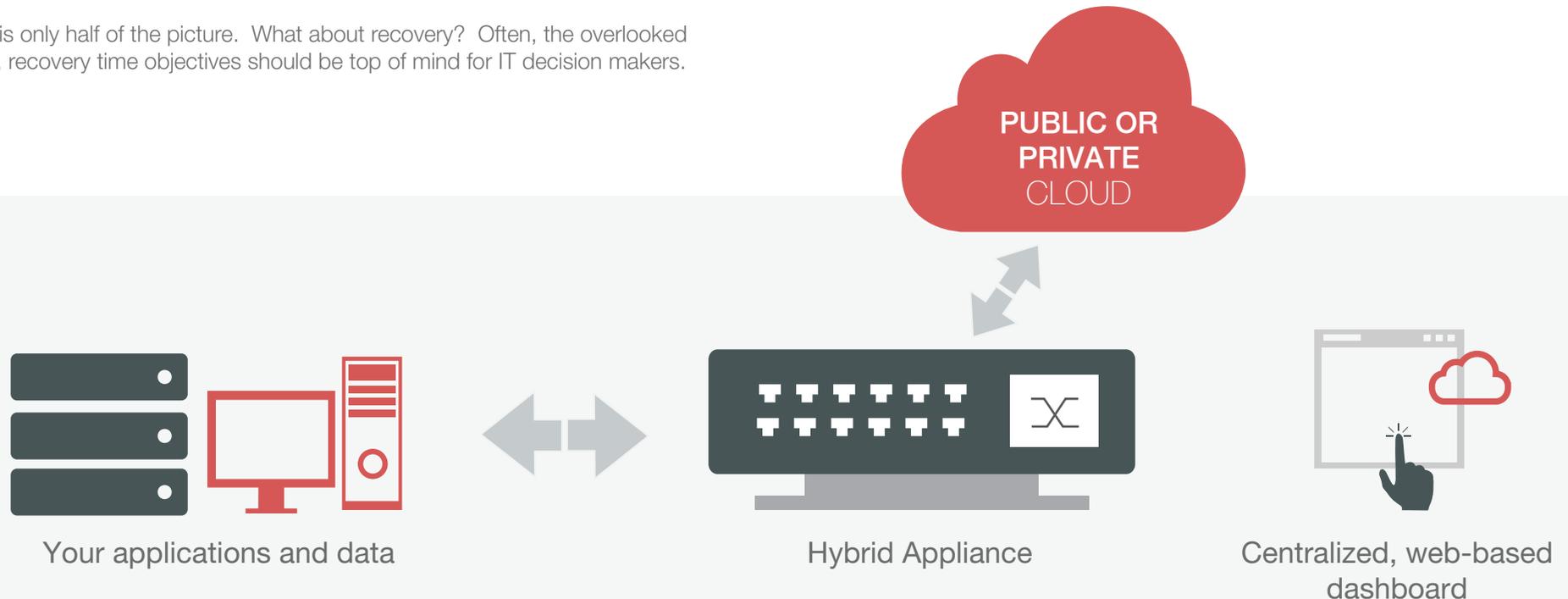
Is recovery a blind spot for hybrid cloud backup?

But backup is only half of the picture. What about recovery? Often, the overlooked middle child, recovery time objectives should be top of mind for IT decision makers.

Relying on the status quo, "if the data is there, then we can get it back" isn't sufficient in this competitive landscape. Most companies would be significantly impacted if the recovery time took days, instead of hours.

With hybrid cloud backup, the most critical data and applications are available locally on the appliance allowing administrators to recover quickly over a LAN connection (instead of a slower Internet connection to the cloud).

So, now that you understand the benefits of hybrid cloud backup, let's gauge how toxic your current backup relationship is. These 9 warning signs will help you decide if it's time to breakup with your current backup and ensure you choose the right hybrid cloud backup solution.



9

Questions to Ask When Evaluating Hybrid Cloud Backup Solutions



01

What Is a Vendor's DNA?

A vendor's DNA may seem trivial, but it's the key to finding a hybrid cloud backup solution that allows you to buy more cloud for storage, instead of appliances.

Most hybrid backup solutions have their roots in backup appliances, not the cloud. Sure, they've jumped on the cloud bandwagon and made it possible to replicate backup data to a second "virtual" appliance that runs in a cloud. This works fine. If the primary appliance goes down, for example, data can still be recovered from the second appliance running in the cloud.

Untether Cloud Storage from the Appliance

The problem is that the one-for-one replication scheme still exists with traditional appliance vendors. Everything on the appliance is replicated to the cloud. Everything deleted from the backup appliance is also deleted from the cloud. So, when you hit the storage limit on your appliance, you're stuck buying another appliance. Been there, done that. Right?

This is counter intuitive, as it doesn't leverage the cloud the way it was meant to. In principle, the cloud is infinite and cheaper, which is why it needs to be untethered from the appliance.



02

Do I Have To Use Your Cloud?

Another key consideration for prospective hybrid cloud customers is the flexibility of the cloud destination. Ideally, you should have the choice to store your data in any of the following:

- Public cloud
- Vendor provided cloud
- Private cloud destination within your own data center (or IT partner)

You don't want to get locked into a vendor's cloud. Modern hybrid cloud solutions allow you to choose your cloud target – which can be configured within the vendor's cloud, a third-party cloud such as Amazon or Azure, or your private cloud.

Our Cloud, Your Cloud, Any Cloud

**VENDOR
CLOUD**

Replicate to your vendor's data centers.

**PRIVATE
CLOUD**

Deploy to private clouds with your (or your partners) data center.

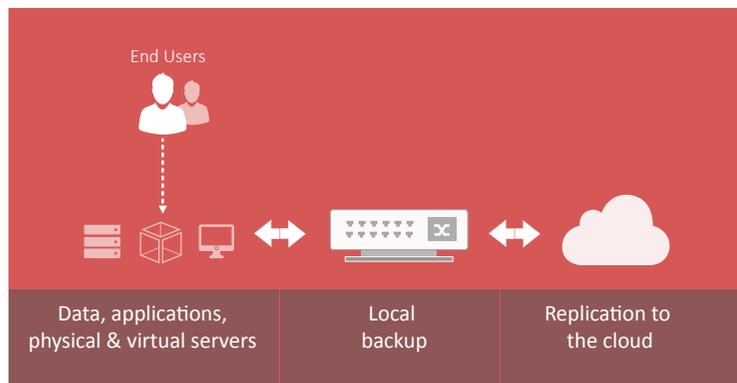
**THIRD-PARTY
CLOUD**

Leverage popular third-party clouds such as AWS or Windows Azure.

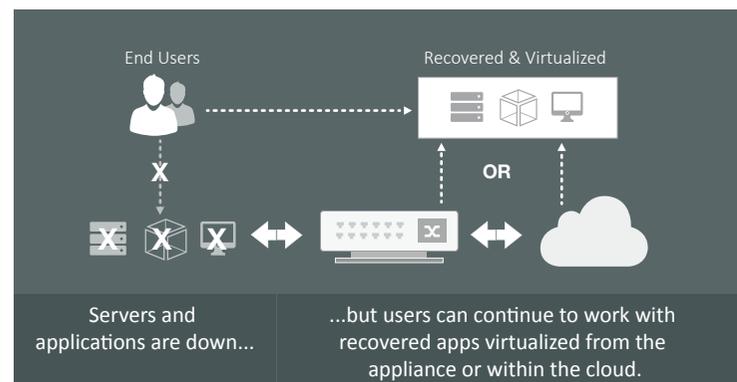
03

Is Disaster-Recovery-as-a-Service Baked Into The Backup Solution?

BEFORE DISASTER



AFTER DISASTER



The hybrid appliance plays an important role in Disaster-Recovery-as-a-Service (or DRaaS as it's popularly called).

DRaaS is the replication of system-level backups to a second location, such as a second computing device or the cloud, which is usually located in a distant second site. In the event of a man-made or natural catastrophe, applications can be booted and the system accessed. Fundamentally, DRaaS lets you “instantly” boot your critical applications from a local appliance or from the cloud.

How DRaaS Works?

Suppose disaster strikes and your building catches on fire, taking out your primary storage and backup appliance. With DRaaS, you can log into a cloud-based dashboard, navigate to the specific servers destroyed by the fire, and instantly bring applications and key files online in minutes. No need to setup a new server, download data from the cloud or re-install applications.

If the appliance can survive the disaster then only the data that was changed or added while the application was executing in the provider's cloud needs to be recovered across the internet connection. This saves a tremendous amount of time. Even if the original appliance is lost, a new appliance can be seeded at the cloud provider's facility and shipped to the primary data center, again reducing downtime.

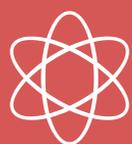
Why do I need DRaaS?

DRaaS is ideal for any business that lacks the expertise or does not wish to provision, configure and test their off-site DR environment. With the systems now virtualized within the appliance and the cloud, your business can conduct “business as usual” and redeploy IT resources to fix the server issue without compromising any data or incurring any downtime.

04

How Fast Does It Take To Recover Data From Your Cloud?

One critical performance metric that few buyers understand is how quickly data is transferred from the hybrid backup appliance to the cloud. Many customers assume it's entirely a function of their company's Internet connection - the larger the pipe, the faster the throughput. While this is largely true, the cloud backup vendor's own software and technologies, including WAN acceleration, can play a large role in improving the speed of cloud replication. A WAN accelerator is an appliance or software that optimizes bandwidth to improve data transfer over a wide area network. Understanding how they work and the underlying technology gives you a better sense of which hybrid cloud backup solutions can truly boost throughput.



Traffic Shaping

Traffic shaping technology allows administrators to:

- Specify how much bandwidth backup traffic can consume at various hours each day (e.g., low bandwidth usage during business hours, high bandwidth usage non-business hours).
- Prioritize network traffic based on the type of application or content type (i.e. email vs. video content).

Pro Tip: Next-gen vendors will leverage dynamic MTU (maximum transfer unit) re-sizing to optimize throughput by intelligently sizing the amount of data sent on each request depending on your network connection.



Over-the-WAN Deduplication

The most efficient way to accelerate the transfer of information across the WAN is to not send it in the first place. By preventing repetitive information from traversing the WAN, data deduplication can reduce over 90% of WAN bandwidth.

Source-Side Deduplication vs WAN Deduplication

Most vendors use source-side deduplication to ensure that the appliance keeps only one version of a file, but not all cloud vendors will dedupe the data over the WAN (making sure the data being replicated doesn't already exist within your cloud backup).

Pro Tip: Advanced cloud backup companies will use some form of over-the-WAN block-level deduplication to reduce the number of packets sent.



Resilient-Resumption Technology

Sending data to the cloud is still fraught with network hiccups and packet drops. So, it's critical that your vendor has the technology to ensure that all of your data gets replicated to the cloud.

Leading cloud backup companies, who are steeped in traffic optimization, take advantage of resilient-resumption technology that enables them to quickly recover and continue operating even when there has been packet loss or some other network disruption.

Pro Tip: A next gen-hybrid cloud solution will employ more advanced optimization techniques to reduce network latency.

05

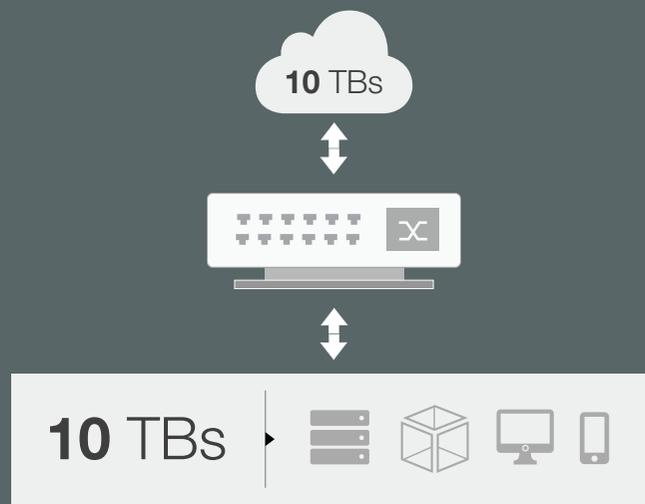
Is My Cloud Storage Tethered To Storage On The Appliance?

How can companies capitalize on cloud cost savings when the hybrid appliance has a finite amount of storage and tethers the cloud to this limit? For example, buying a 2TB appliance means the most you can backup to the cloud is 2TB. Once you hit the appliance maximum, you can't backup any more data to the cloud. And, you're left with two choices: delete data or buy a bigger appliance.

Deleting data to make room for new data means this data is removed from the cloud too. If you buy a bigger appliance, then you get more cloud, up to the size of that new appliance, leaving you in the same rut as before.

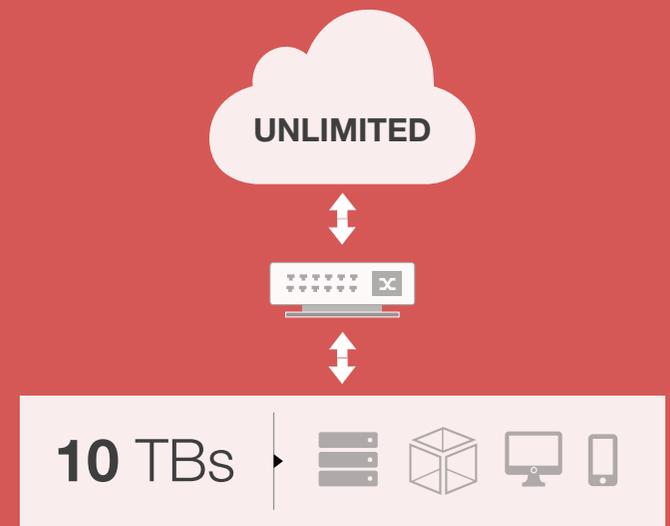
In both scenarios, the costs savings and scalability benefits of the cloud are sidelined because cloud capacity remains coupled with the capacity of the backup appliance. Hybrid solutions that untether your cloud from the appliance enable a bottomless cloud, which is drastically more affordable and scalable than appliance-based storage. This also enables you to manage your cloud as a digital archive and apply data retention rules in order to comply with company or regulatory mandates.

BEFORE



1:1 APPLIANCE TO CLOUD REPLICATION

AFTER



UNLIMITED CLOUD REPLICATION

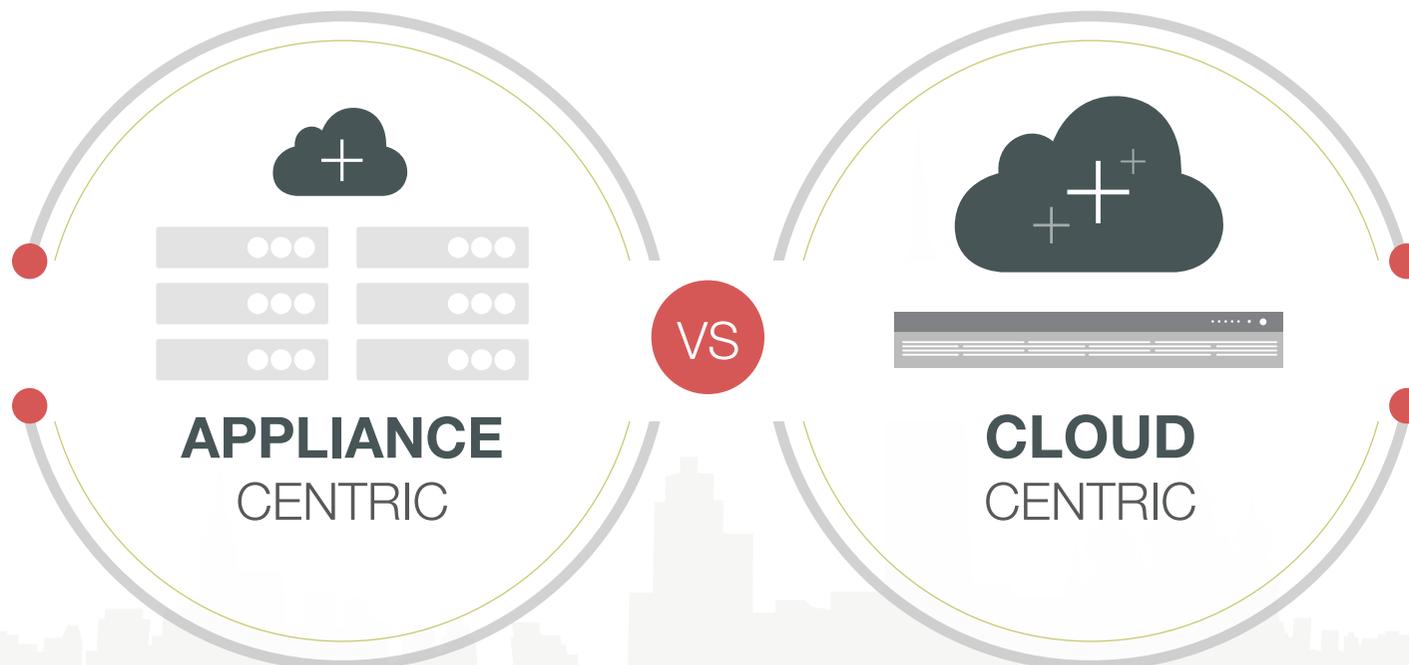
06

Does The Appliance Function as a Purpose-Built Appliance or a Cloud Gateway?

If the hybrid solution limits your cloud storage to the size of the appliance, then the solution is not leveraging the full cost efficiencies and scalability benefits of the cloud.

A next-gen hybrid solution takes advantage of built-in cloud spillover (similar to cloud storage gateways) to automatically stream data from the appliance to the cloud, and grows per your data retention rules. Having the ability to determine what stays local while enabling a “bottomless cloud” backup model (because everything is streaming there) makes the cloud the center of your backup world.

Cloud spillover intelligently routes your data to the cloud without having to worry about storage limits. All data is replicated to the cloud and automatically removed locally (based on custom policies), such that the appliance serves more like a cloud gateway or intelligent cache than a purpose-built backup appliance. This means making smarter use of the backup appliance and leveraging a bottomless cloud for long-term archiving and storage. This also minimizes the appliance sizing risk. Since your appliance only needs to house your most critical data, you don’t need a massive appliance or have to worry about outgrowing your current appliance.



07

Keep Mission-Critical Data Local

Not all data is created equal. And, that's why your hybrid cloud backup solution should allow administrators to treat data distinctly.

- Intelligently segment the most critical, short RTO data and back it up on-device
- Route previous backup jobs, such as smaller file/folder backups and less critical data, directly to the cloud



Since your most critical data is within your most recent backup, it's safe to assume that most recoveries would come directly from the hybrid appliance. With the hybrid appliance being local, data recoveries happen over LAN speeds instead of across slow WAN connections to the cloud provider.

In the case of a real disaster, say your data center is flooded, you can still rely on data backed up to the cloud. While these situations are rare, it's important that your recovery effort is fast and reliable. With hybrid cloud backup, you have two options:

1. Seed a new appliance at the cloud provider's facility and ship it to your primary data center.
2. Use DRaaS functionality to boot up your critical application from the appliance or cloud.

08

Can You Protect All of My Company's Data?



ENDPOINTS

SMARTPHONES & TABLETS



WORKSTATIONS

DESKTOPS & LAPTOPS



FILE

SERVERS



APPLICATION

SERVERS

It's no secret that IT has a bigger "data" environment to protect, which is why your hybrid backup solution should protect a wide variety of servers, devices and operating systems on the source side.

Thanks to BYOD, the rise of virtualization, and an increasingly mobile workforce, IT administrators need to protect physical and virtualized servers, laptops, tablets, and mobile devices. Protecting Exchange, Mac, Unix, Linux, and AIX environments should also be top of mind. So, if you have to support a mixed, heterogeneous environment, make sure your hybrid backup solution can support all of your platforms and operating systems.

It's also important to understand how they protect those servers and platforms. These follow-up questions are necessary to ensure you're getting comprehensive data protection:

1

Do they employ agents at the device level? If so, how do they help you install the agents across your devices and employee base?

2

For virtualized environments, can it protect at the host level and automatically detect and back up every virtual machine in your environment?

3

Can the solution protect environments not addressed by VMware's native backup tools, including ESXi free hosts and hosts that use VMware's physical compatibility mode/raw device mapping?

09

How Expensive is The Solution, All-in?

Figuring out how to compare the costs of hybrid cloud backup solutions isn't easy. Some vendors offer hundreds of different models that require accurate sizing of the appliance. Plus, you need to factor in the following additional costs in order to get an apples-to-apples comparison:



Appliance cost



Cloud storage



Maintenance costs



Support costs

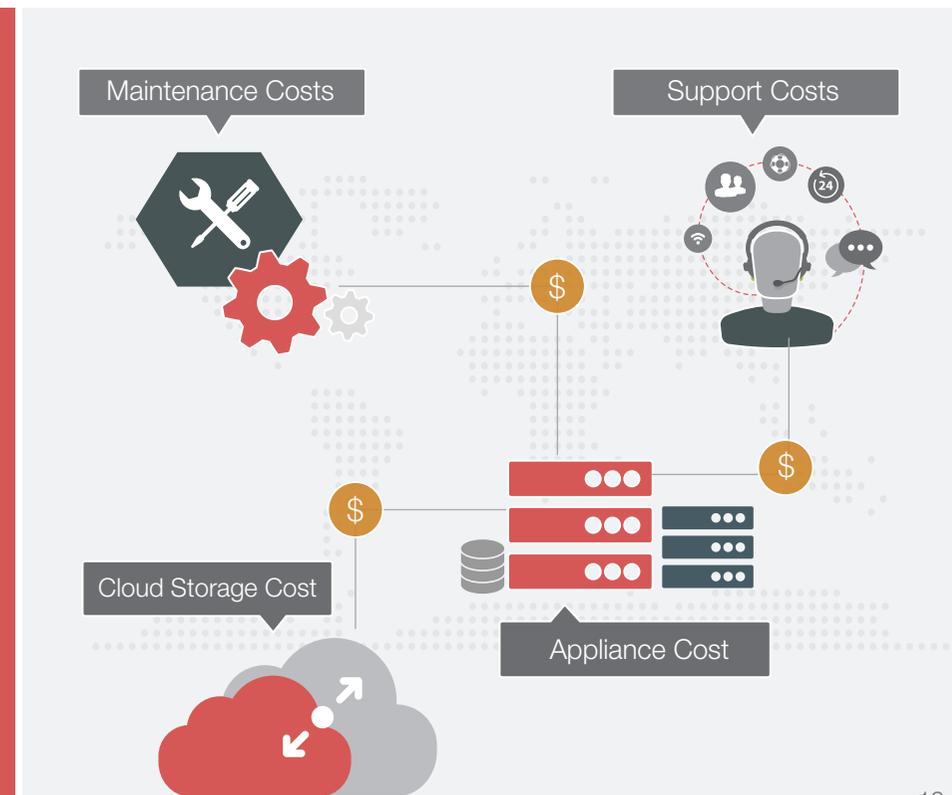
Eliminate the Mis-Sizing Risk

Getting accurate pricing begins with properly sizing the appliance. Spending time estimating your company's needs today and trying to predict them tomorrow while wading through all the vendor's product options often leads to these all too familiar scenarios:

#1 Buying too much appliance and it will sit underutilized - It may take months or years to fill because data growth didn't happen as fast as originally envisioned. But, over buying and paying a large upfront costs should be avoided.

#2 Buying too small of an appliance - Exhausting your available space because your data growth exceeded your estimate means you're going to have to upgrade to bigger appliance or start removing data in the near future.

Both of these use cases result in a lose-lose situation, reflecting a need for a third backup option. Most traditional backup appliances no longer fit the data protection needs of businesses today. Breaking this cycle means making the cloud the center of your backup world.



Final Thoughts

Yesterday's backup isn't equipped to meet or scale with today's data growth demands and data protection needs. It's time for tomorrow's backup. Embracing a hybrid cloud backup solution will enable organizations to achieve better data mobility, protection, and costs savings with higher data resiliency in the cloud.

A next-gen hybrid cloud backup solution will allow you to:



Have LAN access to your most important data in terms of latency and bandwidth while giving you the protection and low cost of cloud storage.



Untether cloud storage from the appliance. This means storage on the hybrid appliance grows much more slowly, since it only needs to be large enough to store a few backups and your most critical data and applications.

A next gen hybrid cloud backup solution puts the cloud at the center of your data protection universe. These solutions are far easier to implement, dramatically more affordable, and capitalizes on the efficiencies of the cloud.

These capabilities, while rare to find in a single solution, are starting to emerge in the market. By asking the right set of questions, you can select and implement a data protection solution that can meet your backup and recovery needs and scale with your evolving data growth demands.

How To Solve Backup Challenges with Infracale



Infracale provides a hybrid cloud solution that changes how you think. Wickedly fast, scales the way the cloud was meant to, and so simple our customers tell us that they spend just a few minutes a week managing it. Infracale is an entirely new approach to cloud backup and recovery.

We created cloud software that allows you to protect your data – fast, smart, and bottomless. You can build your own cloud, use someone else's or a combination of both. You can buy our software or rent it. You can use our infrastructure or buy and build your own. No matter your desire, Infracale delivers a cloud that fits how you want to do business.

For more information or to schedule a demo call: **+1 877.896.3611** or email: team@infracale.com

Wickedly Fast

With Infracale, you can backup your data 5X faster than competitors. Infracale's hybrid cloud backup appliances include built-in cloud spillover to automatically stream data from the appliance to the cloud, and grows per your data retention rules.

Smarter Than a 4th Grader

Smarter is what's missing from your backup experience. We make complex backup software so simple our customers tell us that they spend less than 5 minutes a week managing it.

Bottomless Cloud

There is a disconnect with appliance-based backup. You need more space? Buy another appliance – that's yesterday. We scale backup the way it was meant to – without additional hardware.

Sources

- a. **HYBRID CLOUD BACKUP SOLUTIONS WILL GROW AT A CAGR OF MORE THAN 80%.**
The Taneja Group: Taneja Group Emerging Market Forecast (January 2011)

- b. **40% IS THE YEARLY PROJECTED DATA GROWTH RATE, CAUSING COMPANIES TO ROUTINELY MISS THEIR BACKUP WINDOWS.**
IDC: The Digital Universe of Opportunities: Rich Data and the Increasing Value of the Internet of Things (April 2014).
<http://www.emc.com/leadership/digital-universe/2014iview/executive-summary.htm>

- c. **98% OF ORGANIZATIONS CAN'T GO MORE THAN 1 DAY WITHOUT CRITICAL DATA.**
(June 2012)
<http://bumi.com/press-releases/98-of-organizations-unable-to-tolerate-more-than-one-day-without-access-to-critical-data-2/>

- d. **37% OF COMPANIES SURVEYED HAVE TO COME TO TERMS WITH VIRTUAL, PHYSICAL AND CLOUD-BASED SERVERS.**
54% OF THE SAMPLE GROUP HAVE TO MANAGE TWO OR MORE HYPERVISORS.
IDC Report: Complexity and Data Growth Driving Small and Medium-Sized Environments Toward a New Generation of Data Protection (June 2014).

- e. **36% OF COMPANIES DO NOT BACK UP VIRTUAL SERVERS AS OFTEN AS THEIR PHYSICAL SERVERS.**
InformationAge: Why backup and recovery needs to be strategic not siloed (February 2015).

- f. **ONLY 34% OF COMPANIES TEST THEIR TAPE BACKUPS, AND OF THOSE WHO DO, 77% HAVE FOUND FAILURES**
Storage Magazine: stagemagazine.techtarget.com

- g. **22% OF HARD DRIVES WON'T LAST FOUR YEARS.**
Backblaze: How long do disk drives last? (November 2013), <https://www.backblaze.com/blog/how-long-do-disk-drives-last/>