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Technical Brief

Optimizing Availability with Backup Appliances

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OVERVIEW

Rapid adoption of backup appliances is transforming data protection. According to recent IDC research, worldwide revenues for backup appliances continue to experience double-digit growth year over year, while the value of storage hardware remains flat. Numerous options exist when it comes to backup appliances, and organizations must choose the solution that provides the greatest reliability, flexibility, and return on investment. Many leading companies have chosen Veeam Backup Repository, due to its enterprise continuity, cloud data management, compliance, and visibility.

CONTEXT

Roger Boss described how digital transformation and continuous data availability are the new norm for organizations. Michael Cade discussed IT availability using backup appliances and offered tips about how to choose the right solution.

KEY TAKEAWAYS

Data is the lifeblood of organizations today.

Digital transformation has changed how organizations look at data, how data is managed, and the steps needed to protect data. It is also changing the way goods and services are delivered. Digital transformation is changing all businesses into software businesses, regardless of industry. Data has become the lifeblood for organizations. Everyone wants data immediately and on the devices of their choice. In this environment, tolerance for downtime is minimal. Keeping data available and accessible is essential for doing business.

Poor data availability is costly and damaging.

Every year, Veeam surveys thousands of CIOs from businesses of all sizes, sectors, and geographies, for its Availability Report. The 2017 survey discovered:

- 82% of CIOs say there is a gap between what the business demands and what their team can deliver.
- This gap results in unplanned downtime costs averaging $21.8 million per year.
- Legacy backups measure in hours and days, more than 16% fail, and there is no visibility.
- Today's solutions require service level agreements (SLAs) of less than 15 minutes, with verifiable recovery and proactive visibility.

The cost of poor availability is high. Among survey respondents, 48% indicated it has caused a loss of customer confidence, 42% said it has damaged their brand, 37% suggested it has hurt employee confidence, and 22% indicated it has diverted resources from long-term or business-critical projects.

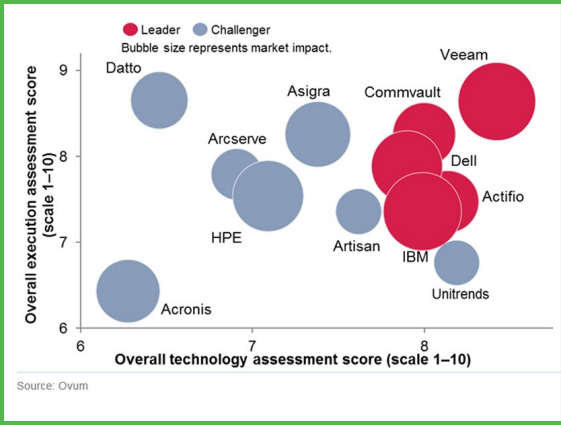
Veeam provides 24/7/365 availability for the "always on" enterprise.

With Veeam, applications remain up and running, so organizations are ready no matter what occurs. Veeam provides availability for virtual, physical, and cloud-based workloads through three core capabilities:

1. Enterprise continuity. This enables customers to achieve recovery service level objectives of less than 15 minutes for all applications and data. It also provides disaster recovery orchestration.
2. Cloud data management. This supports availability for workloads across any cloud or location, to maximize IT investments and increase flexibility.
3. Compliance and visibility. Through proactive monitoring, reporting, automated testing, and documentation, Veeam ensures that business and regulatory requirements are met.

Veeam customers include 73% of the Fortune 500 and 56% of the Global 2000. In addition, Veeam enjoys a Net Promoter Score of 73—three times the industry average.

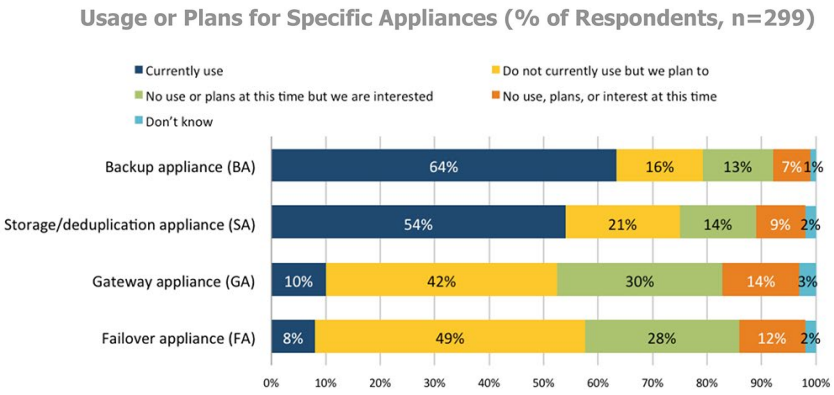
Customers aren't the only ones endorsing Veeam, however. Gartner has recognized Veeam once again as an industry leader and Ovum named Veeam the clear leader in its decision-making matrix for selecting a data availability and protection solution in the cloud era.



> Veeam enables enterprises of all sizes to achieve 24 x 7 x 365 availability. With Veeam your applications remain up and running when you need them, so your organization is ready no matter what.
>
> *Roger Boss, Veeam*

Backup appliances are in high demand and offer compelling benefits.

In recent research, the Enterprise Strategy Group found significant demand for backup appliances. Veeam sits in the backup appliance category. Backup appliances are software-only solutions that can sit on the compute layer (either virtual or physical). They can also sit on any vendor's storage model.



Backup appliances can offer five key benefits:

1. **Lower capital expenses.** This includes lower infrastructure, acquisition, and evaluation and testing costs.
2. **Lower operating expenses.** Backup appliances offer integrated management, less troubleshooting, standard configurations, and streamlined updates.
3. **Modern architectures.** Backup appliances support consistent deploy quality, balanced configuration, and right-sized solutions.
4. **Better experience.** This includes unified management, great recovery performance, and solutions that match IT skill sets.
5. **Convenience.** Backup appliances provide all-in-one design, easy ordering and delivery, pre-assembled solutions, and easy integration.

Backup appliances fall into three categories:

- **Turnkey solutions.** These provide backup software and storage capacity within the appliance.
- **Deduplication devices.** These are standalone arrays that provide deduplication and compression against backup and archive data. These reduce backup and archive storage costs.
- **Cloud integrated storage/gateways.** These are a cloud native way of pushing a backup retention to a cloud-based storage solution. The idea is that some physical storage will be on-premise, but longer-term retention is sent to cloud-based storage offerings.

With backup appliances, organizations can address challenges like unreliable, inefficient backup processes.

Five common problems cause organizations to consider backup appliances:

1. **Backup sprawl.** As IT teams add VM hosts and storage keeps pace with demands, additional backup infrastructure is usually needed to maintain existing backup windows. This increases the overhead required to run the backup process and manage additional devices.
2. **Backup overspill.** If overnight backups can't complete in time, they may spill over into the next working day. This can translate into slower performance and application inaccessibility.
3. **Unreliable backup and recovery.** Administrators face complexity as they try to manage virtual machines with different snapshots, agents, and schedules. Backup and recovery may not be reliable, increasing the risk of data loss and downtime.
4. **Inefficient tools and processes.** Modern backup solutions are needed to address the challenges of modern IT infrastructures.
5. **Budget, personnel, and other constraints.** IT departments are under pressure to increase performance, while keeping expenses low.

When selecting a backup appliance, IT teams must evaluate their unique business needs.

Every organization is different in terms of environment, workloads, and requirements. When selecting a backup appliance, it is a good idea for IT teams to consider factors such as:

- **Storage efficiencies.** With limited rack space, organizations may need to condense the size of their backups considerably.

- **Speed of backups and recovery.** Key considerations are business operating hours, as well as how fast recovery is needed in case of a system failure.
- **Scalability.** Depending on the size of the business, more than one failover appliance may be needed.
- **Simplicity, usability, and ease of deployment.** Most IT teams are reluctant to retrain staff, so ease of use is essential.

The classic "iron triangle" of project management can be applied to selecting a backup appliance. Teams must evaluate which tradeoffs they want to make between backup times, quality, and cost.

As part of the solution selection process, enterprises should look for backup appliances with the following features:

- **Deduplication.** This enables backup appliances to store unique data blocks and reduces the size of data stored on disk.
- **Replication/disaster recovery.** Replication provides highly available offsite disaster recovery of tier one applications, along with simple replication and fast recovery of backup data.
- **Recovery.** With the right backup appliance and availability software, IT teams should be able to meet SLAs of less than 15 minutes.
- **Verified recoverability.** Backup appliances should provide the ability to spin backups up for verification and send a report to the IT team.
- **Visibility.** IT teams need complete visibility into both backup replication tasks and the whole IT infrastructure.
- **Virtualization/cloud readiness.** This is a key consideration, since virtualization and cloud are becoming more prevalent.

Veeam Backup Repository offers three tiers of backup storage: primary, secondary, and archive.

Veeam Backup Repository

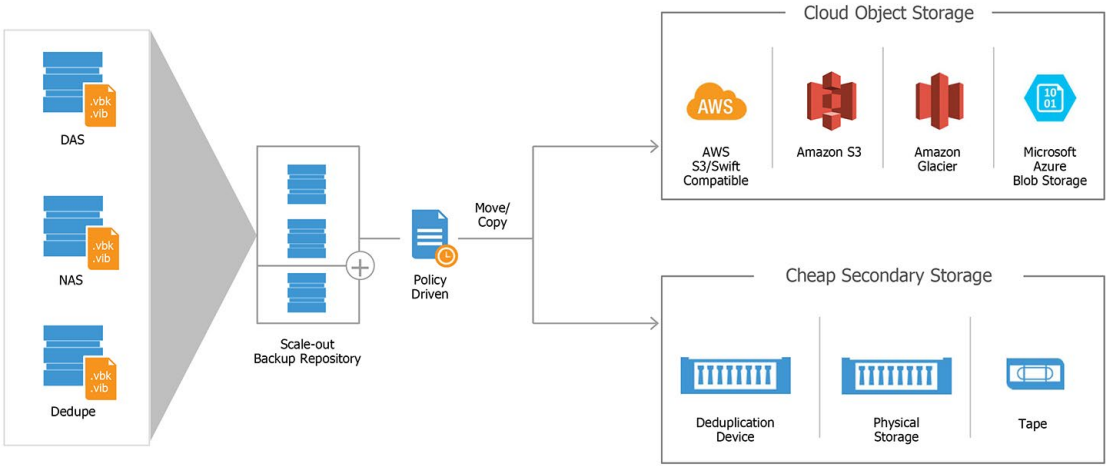
- Primary Backup – 7 / 14 / 30 Day retention, Fastest Restore option.
- Secondary Backup – 7+ Day retention, Offsite location, longer term retention.
- Archive Tier – Archival and Compliance

	Primary	Secondary	Archive
Cost per TB	High cost	Low cost	Lowest cost
Storage capacity	Low capacity	High capacity	Incredible capacity
IOPS capacity	High	Average	Ridiculously low
Reliability	Standard	Worse	Best
Restore costs	Lowest	Average	Worst

IT teams must decide which options are best suited for their primary, secondary, and archive storage needs.

The best options for primary, secondary, and archive storage are:

- **Primary backup storage: the landing zone.** The best raw disk repositories are any Windows or Linux server—either physical or virtual. Physical server storage options include local storage, DAS (JBOD), or SAN LUN. Virtual server storage options include iSCSI LUN connected via in-guest iSCSI or a physical RDM disk. IT teams should avoid low end NAS and appliances due to reliability, VMDK on VMFS due to recoverability, and SMB (CIFS) network shares due to reliability and performance issues.
- **Secondary storage: the main tank.** Long-term retention requires full backup storage efficiency. Good options include ReFS 3.1, deduplicating storage appliances, or Windows Server 2016 with deduplication enabled. For archive reliability, ReFS 3.1 on Storage Spaces can't be beaten at the low end. Dedupe storage has a relatively low cost per TB. However, it suffers from poor random I/O performance, poor read performance, and poor ingest rates, and it requires a significant upfront investment. Fortunately, many of the storage vendors with which Veeam integrates address these common dedupe pains. These include Dell EMC Data Domain, HPE StoreOnce, ExaGrid, Quantum, and Windows.
- **Archive storage: the shoebox.** Archive storage will be introduced in Veeam Version 10. It is a policy-driven extension of the scale out backup repository. It will support cloud object storage on AWS S3/Swift, Amazon S3, Amazon Glacier, and Microsoft Azure Blob storage. It will also support inexpensive secondary storage, such as deduplication devices, physical storage, and tape.



ADDITIONAL RESOURCES

More information about availability and backup appliances is available at Veeam's solution web page, the white paper "Bridge the Gap in Data Protection and Recovery by Using Backup Appliances with Availability Software," and the 2017 Gartner Magic Quadrant for Data Center Backup and Recovery.

> Backup appliances are no longer just a dumping ground for backups. We want to get more leverage out of that investment. Veeam makes that possible and enables organizations to do more with their data.
>
> *Michael Cade, Veeam*