



veeAM



2021

Modern Data Protection

Best Practices by Veeam



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Introduction

In 2020 organizations around the world were forced to react to fast changing business realities. Now the demands and expectations of data, where it is created and accessed, whether it is on-prem or cloud, the sheer volume of data, and the desire to better leverage that data to support customers and operations, has led to a need for faster delivery times and even higher service levels.

While the overall state of the data protection market is concerning, Veeam has a decision framework that highlights twelve modernization best practices. These best practices serve as a checklist and a methodology for you to improve your data protection.



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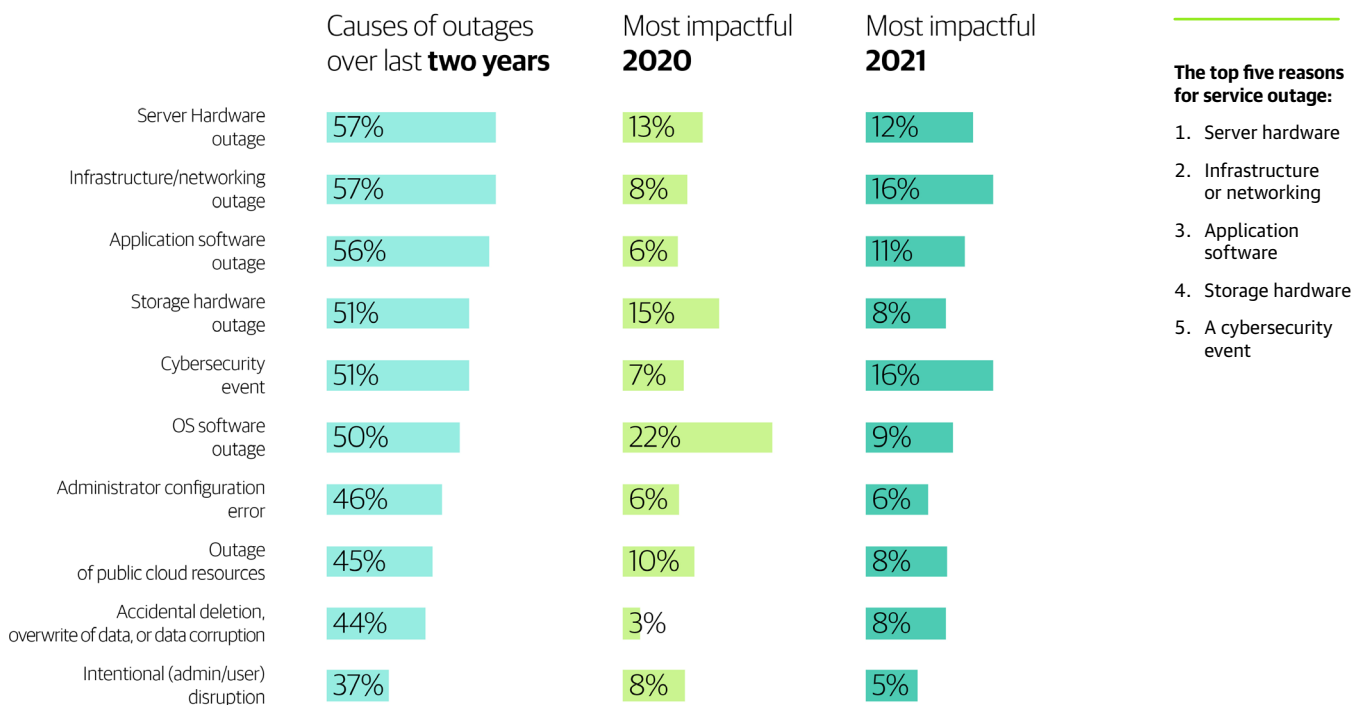
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Backup Remains Important, and Challenging

In early 2021, Veeam concluded the industry's largest global research effort on data protection, the Veeam Data Protection Report 2021. The findings below are based on a global sample (28 countries) of unbiased customers of a variety of backup vendors (Veeam customers accounted for less than 4% of the survey). The results paint a concerning picture regarding the reasons for service outages, and the poor state of backup for many organizations.

Reasons for service outage

Over the past two years, what were the causes of the outages that your organization experienced, and what was the cause of the outage that had the most impact on your organization? (n=2,695)



A modernized backup and recovery practice is required to fully and rapidly recover from a wide range of outage issues that can challenge the data center. For over a decade, a combination of cost, complexity and capability (“3Cs”) have been the driving reason of backup frustration, and are the reasons why organizations change their backup and recovery solution.

4 “C” Reasons to Change Backup Vendor

Legacy Backup	Modern Data Protection
Move to Cloud	Cloud-Native
Missing Capabilities	Powerful
High Complexity	Easy-to-Use
High Cost	Low TCO

In 2020 and 2021, we see that a fourth “C” of Cloud, is rising in terms of the drivers for change in a company’s backup and recovery approach. For the last two years, the single most important driver that would cause an organization to switch a data protection vendor is to improve the reliability of backup and recovery.

Top drivers to change backup vendor

	All Drivers	Most Important
To improve recovery point objective (RPO)/recovery time objective (RTO) SLAs	31%	12%
To improve reliability (success rates) of backups	30%	9%
To improve return on investment (ROI)/total cost of ownership (TCO)	30%	9%
To move from on-premises data protection to cloud-based data protection service	36%	9%
To reduce software or hardware costs	30%	7%
To diversify and use different data protection tools for different workloads	29%	7%
To reduced complexity or operational management (e.g. ease of use)	29%	6%

Best Practices to Modernize Your Data Protection in 2021

Modern data protection provides the confidence to accelerate digital services, ensures that you meet recovery SLOs (Service Level Objectives), is simple to manage and license, is flexible in how you can deploy it, and above all, is reliable. Veeam delivers a modern data protection solution that can help you achieve this. Additionally, Veeam helps you accelerate adoption of AWS, Azure, Google Cloud, and SaaS such as Office 365, delivers reliable protection against ransomware and other cybersecurity threats, and supports agile application development using containers and Kubernetes.

Modern Data Protection

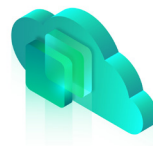
(aka Modern Backup and Recovery)

Accelerate digital services. Meet recovery SLOs.
Orchestrate recovery in case of an outage.
Protect from Ransomware and cyberthreats.
Know your data is protected and move confidently
to Office 365 / AWS / Azure / Google.
Reduce cost and complexity.

Simple. Flexible. Reliable. Powerful.



Break free from
legacy backup



Office 365 / AWS /
Azure / Google



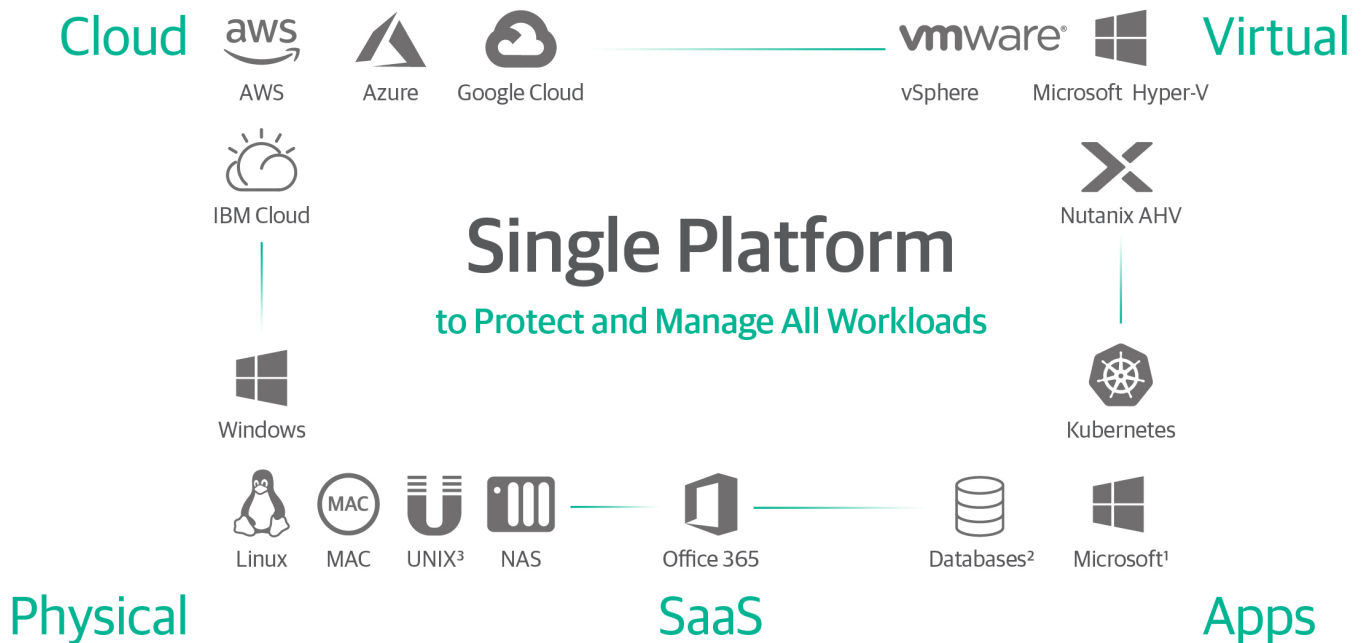
Ransomware and
Data security



Kubernetes and
Containers

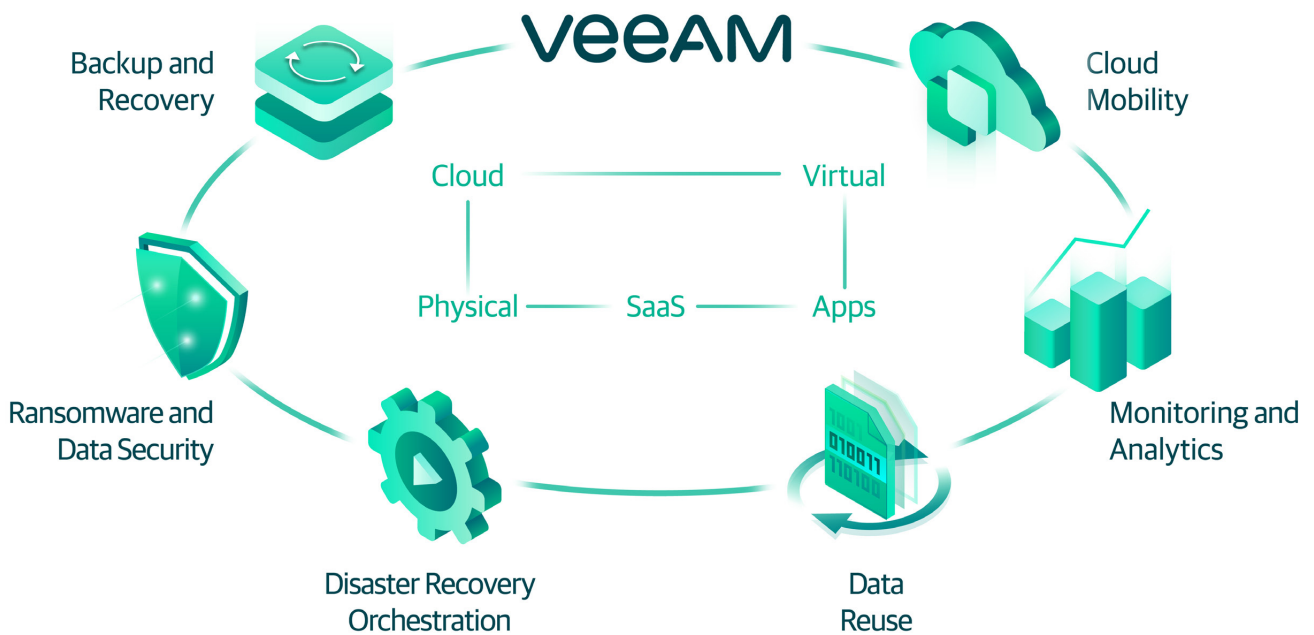
1. Comprehensive Platform

There is a need in the industry for a comprehensive, extensible data protection platform that can manage all your data and applications from a single console. Veeam not only addresses the common issues around backup failures and long restorations times, but natively supports each workload and platform in your hybrid-cloud, multi-cloud data center. Veeam does not retrofit legacy technology into new locations. The Veeam Platform is modular and extensible, with the ability to deliver virtual and physical protection on-prem, or Office 365 and AWS-, Azure-, and Google cloud-native protection.







1 Microsoft Active Directory, Exchange, SharePoint
 2 Microsoft SQL Server, Oracle, Oracle RMAN, PostgreSQL, MySQL and SAP Hana
 3 IBM AIX and Oracle Solaris

With Veeam, all workloads integrate into a single platform that offers comprehensive data management capabilities, such as backup & recovery, data reuse, cloud mobility, monitoring & analytics, orchestration & automation, and governance & compliance.



This 4-in-1 data capture capability means that you can meet your recovery point objectives (RPOs). Veeam eliminates data loss by protecting your critical data through: 1) backup; 2) replication; 3) storage snapshots; 4) CDP.

4-in-1 for Best RPOs

-  **1. Backup**
-  **2. Replication**
-  **3. Storage snapshots**
-  **4. CDP**

Also with **Veeam SureBackup™ – automated backup testing and recovery verification** – you'll be confident that your backups are valid and reliable. Recall that backup reliability is the top reason to change backup products.



Over a decade ago, Veeam pioneered Instant VM Recovery®, where data is quickly mounted, and time to first byte is not gated by the entire restore being completed. This means that business-critical data is quickly available, and that operations are resumed without incident.

Veeam can also instantly recover enterprise applications, such as Microsoft SQL Server and Oracle, as well as file and network attached storage (NAS).

Further, Veeam delivers the ability to recover any workload to VMware vSphere or Microsoft Hyper-V. This is useful if you don't have the exact same infrastructure for recovery, or if you are migrating data from one hypervisor to another.

You shouldn't have to restore an entire backup or image, just to get the specific data that you need. Veeam provides granular recovery, search and eDiscovery with a collection of powerful Veeam Explorers for different enterprise applications.

Veeam Explorer for:

- Office 365
- Exchange
- SQL Server
- Storage snapshots
- Active Directory
- SharePoint
- Oracle

Veeam also allows for individual file recovery from server, file share, and Network Attached Storage (NAS) backups.

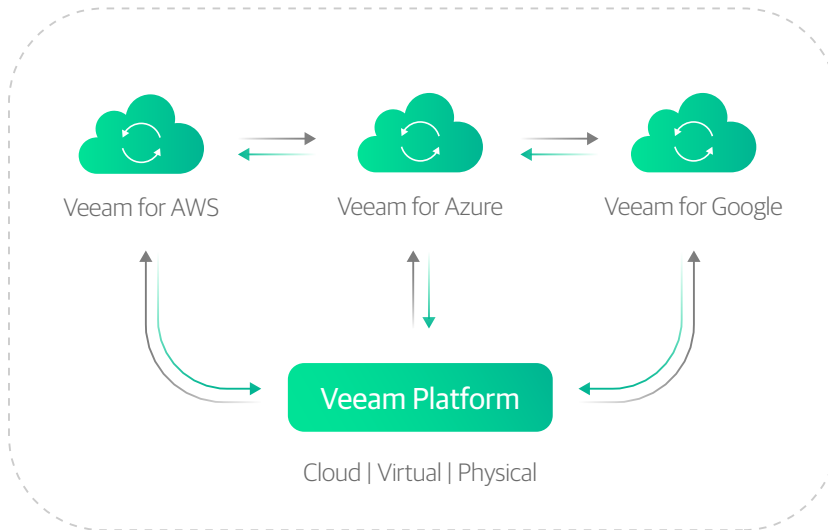
2. AWS, Azure, Google Cloud Accelerated Adoption

Organizations have been increasing their adoption of AWS, Azure, Google and other cloud services, and the pandemic has accelerated many businesses' plans to move to, and exploit cloud services even faster. Survey data above shows that moving from on-premises data protection to cloud-based backup capabilities is a top-3 driver for changing backup solutions. However, some backup vendors require bolt-on products, make data retrieval more challenging, or charge extra fees when using the cloud.

Veeam delivers modular, cloud-native backup and recovery to protect cloud-specific workloads in AWS, Azure or Google Cloud. Cloud-native backup can also be snapped into more comprehensive Veeam Platform deployments, unifying hybrid-cloud, multi-cloud data protection and advanced data management capabilities into a single interface and enabling extensive data mobility across platforms.



AWS, Azure and Google Cloud-native Backup and Recovery



Standalone cloud-native modules for backup and recovery

Backup and recover to / from anywhere

Single Platform for multi-cloud data protection, data management and cloud mobility

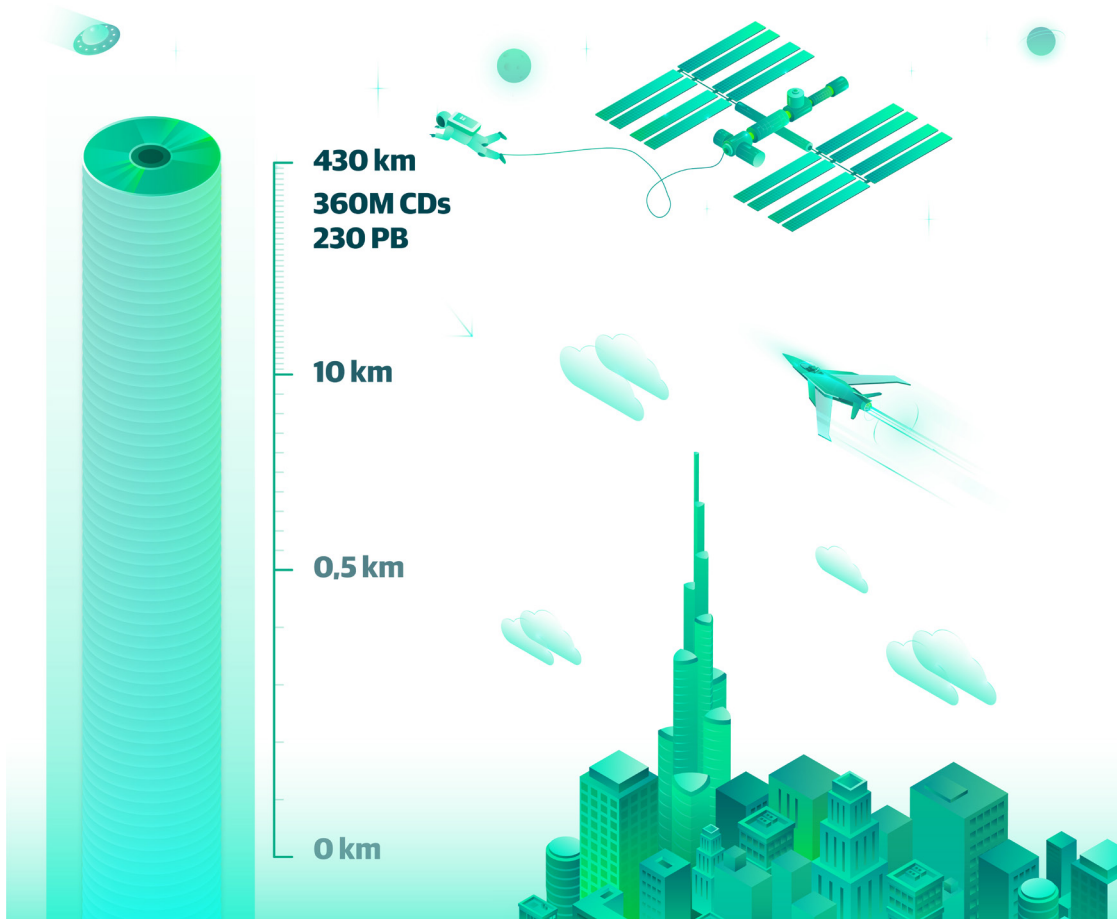
Leverage Cloud for storage capacity and long term data archival

Veeam delivers a policy-engine and data tiering capability that manages backup data through **performance, capacity, and archival tiers.**



This means that data is automatically managed on-premises for fast performance, sent to the cloud (AWS, Azure, Google Cloud Storage) or 3rd party object storage for capacity optimization, and then through its long-term retention lifecycle for archival purposes (Amazon S3 Glacier and Glacier Deep Archive Tier and Azure Blob & Archive Tier Storage). Veeam can send aged data to object storage at a specified time, or send data to the cloud immediately, optionally using S3 Object Lock for immutability. What is very powerful, is that data in the capacity tier can be accessed just as if it were on-prem in the performance tier. This means that Veeam's powerful Instant Recovery, as well as entire computer, disk, file, and item-level recoveries are just a few mouse clicks away.

In 2020 Veeam sent 260PB of data to the cloud which is equivalent to a 430 km tall stack of 360M CDs – enough to reach The International Space Station.



Can you imagine a 430 km tall stack of CD's?

Enough to reach The International Space Station?

That's the amount of data that Veeam moved into our top 3 public cloud partners in 2020.

Veeam uses intelligent block recovery to fetch the closest, non-offloaded segment of data, which means cloud data transfer are minimized, resulting in faster data transfer speeds, and lower costs.



3. Ransomware Resiliency and Security

Every business, in every vertical, in every country is rightfully concerned with ransomware and data security. Ransomware and cyberthreats are on the rise, and bad actors are getting more sophisticated, targeting backup data. With an increasing threatscape, it is imperative that a backup solution has a means of alerting suspicious and anomalous activity, as well as providing strong safeguards to ensure that backup data is safe from accidental or malicious destruction, encryption, or alteration. These capabilities should be available without having to purchase, deploy, and manage proprietary hardware.

Veeam offers alerts and alarms that let you spot potential cyber issues early on. With backup data immutability, delivered through a hardware-independent hardened Linux repository, and secondary copies of backup data protected in the cloud or in on-premises object storage through S3 Object Lock or in a trusted service provider with expertise in reliability of recovery services, you can be assured of reliable ransomware protection. Veeam also natively supports physical tape and offline rotating drives, to offer true air-gapped protection.





Veeam was first to market with the Secure Restore capability, which scans machine data with your antivirus software before restoring the machine to the production environment. Secure Restore is simple to enable, and allows you to update your preferred antivirus software to the latest signature levels, and to verify in a non-production, network isolated sandbox, that you will not re-introduce threats in to your data center before restoring data.



Detect



Protect



Test



Recover



Veeam ONE



Air-gapped Backup



Immutable Backup



Veeam SureBackup



Veeam Secure Restore

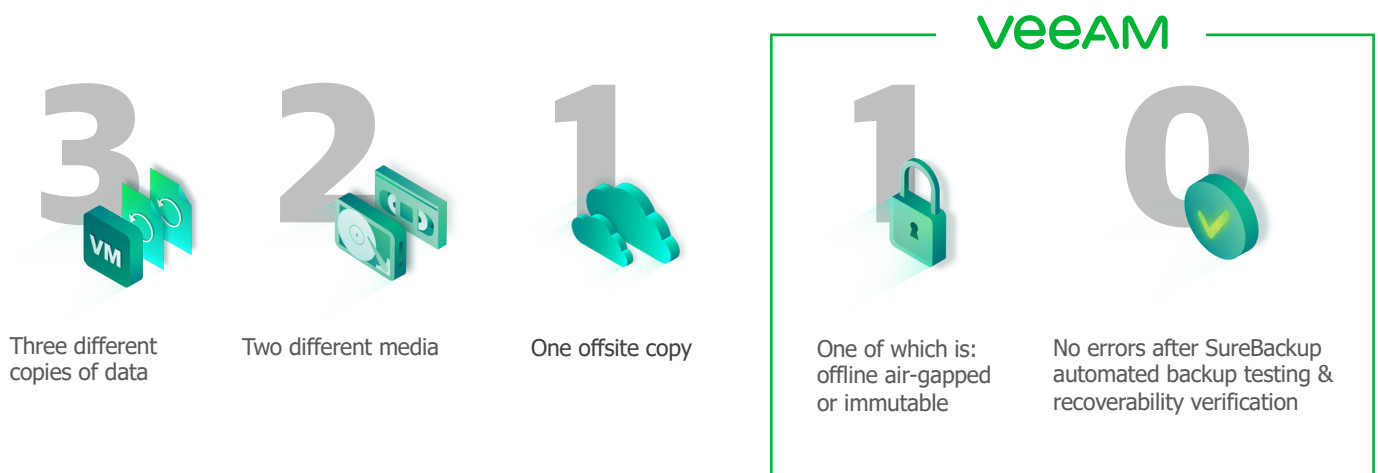


Veeam DataLabs



Veeam Backup & Replication

Veeam recommends a backup best practice of following the **3-2-1-1-0 rule**, which is our enhancement to the well-known industry 3-2-1 rule. With 3-2-1-1-0, the suggested best practice is to have 3 different copies of your data, on 2 different media types, 1 of which is offsite, 1 of which is offline, air-gapped or immutable (perhaps through Veeam's hardened Linux repository, S3 Object Lock, physical tape, or ejected drives), and that there are 0 errors on the backup copies as they have been previously automatically tested and verified as being recoverable (such as through Veeam's SureBackup capability).



More information about how Veeam can help you win the war on ransomware can be found here: www.veeam.com/ransomware-protection.html

4. Kubernetes: Backup, Disaster Recovery, and Application Mobility

As cloud-native adoption and usage continues to explode, Kubernetes-native backup is one of the most critical, yet overlooked, challenges faced by Kubernetes operators today. Kubernetes, the fastest-growing infrastructure platform, is quickly becoming the foundation for all applications, no matter where they might be deployed. Its ubiquitous nature has it on track to be the next enterprise platform of choice, joining the ranks of Linux and vSphere.

Due to this rapid Kubernetes growth and increased production deployments at scale, enterprises are now focused on "Day 2" production challenges such as backup, disaster recovery, and application mobility. While Kubernetes takes away a lot of the pain of ensuring high availability and scalability of your application services, these benefits do not extend to your data, making data management of Kubernetes-native applications a critical priority.



#1 Kubernetes Backup

Kasten K10 by Veeam enables enterprises to confidently run applications on Kubernetes



Backup &
Restore



Application
Mobility



Disaster
Recovery

Veeam uniquely saw the rise of server virtualized environments a decade and a half ago, and today we see containers and Kubernetes environments on the near-term horizon. In October 2020 Veeam acquired Kasten, a best-in-industry container protection and Kubernetes orchestration platform. **Kasten delivers comprehensive backup, disaster recovery, and application mobility for containerized workloads.**



Veeam delivers application mobility by reducing the friction of data movement. Leveraging comprehensive policy-based data management services, and a powerful data movement engine, Veeam ensures that your application is ready to run according to where, when, and how the business needs it to be. Application mobility is vital in helping you realize your hybrid-cloud, multi-cloud goals.



5. Data Portability and Cloud Mobility

Too often, data is stranded in isolated silos, due to having to deploy multiple backup approaches, each with its own data format. This creates friction for data movement, especially when trying to move data to, from, or across multi-cloud. Your backup should not be holding your data hostage. It's your data, and it should be effortless to access, and be seamlessly moved to where you need it to be, when you need it to be there.

Veeam writes data in a self-describing manner. There is a backup catalog to speed up operations, but even if that catalog should become damaged or unavailable, your data can still be recovered. This differentiates Veeam from other providers as backup Veeam **data is highly portable**, making it easy to migrate data to the cloud, bring it back when you need it, or move from one cloud provider to another.

Veeam even automatically performs the UEFI or BIOS conversion from Windows to Linux machines when moving from Azure to AWS, or vice versa.

Veeam doesn't lock you in. Veeam's portable data format means that with your credentials, you can use our Windows and Linux extract utilities to bring back your data without the presence of a Veeam backup server. You can also download the free Veeam *Community Edition* version of the product and quickly restore your data, again using your secure credentials. This means that you'll never be locked out of your data.



6. Software-Defined and Extensibility

Some backup solutions are predicated on specific, proprietary hardware. Often this hardware is just commodity compute and storage that a vendor charges a premium for. This can be inflexible, and force costly upgrades for many components, when perhaps only more storage capacity is needed. Making matters worse, given the economic realities that many businesses are in today, they cannot reuse existing infrastructure, and may be forced to implement hardware outside of their preferred vendors. This also can make scaling up, or down more difficult, reducing the backup solution's extensibility.

Veeam is software-defined and infrastructure agnostic.

Our expertise is in delivering innovative backup software. There are many hardware vendors that have spent countless programmer years innovating their storage, compute, and networking solutions. Veeam feels that you should have the flexibility to choose the right mix, of the right components to meet your requirements, and to easily make changes if your requirements shift over time. This may include leveraging infrastructure that you already have or preferring to purchase hardware that you already know how to manage.





Veeam offers a horizontally scalable software defined storage (SDS) architecture. On the front end, Veeam can easily be extended to ingest more data as your backup volumes, or performance needs change. On the back end, a **Scale-out Backup Repository (SoBR) is a software-defined construct that pools different types of storage devices for backup data.** Through Veeam's policy engine, data can be placed on the most appropriate devices, including direct attached storage (DAS), deduplication appliances, network attached storage (NAS), object storage, and the cloud. With Veeam, storage device migration and capacity additions, or subtractions, become seamless.

This means that one instance of Veeam backup can easily grow and flex as your business requirements and procurement strategies evolve. There is no additional Veeam cost to use the SoBR, including the cloud resources for the capacity and archive tiers.

7. Speed and Scale

No organization can afford to wait for backups to complete over a long period of time. And when it comes to restore and instant mount of data, speed, or the time needed to get access to data, is important but being able to quickly capture the backup data also matters. Speed is critical to get the business back in business. Scalability also matters. A backup solution should be able to easily scale up, or down, and pivot to meet your current needs, even if they change in the future.

Veeam's comprehensive **4-in-1 data capture (backup, CDP, replication, storage snapshot-based)**, industry pioneering **Instant Recovery**, and other efficiencies, such as **built-in WAN acceleration, changed-file-tracking for file shares and network attached storage (NAS)**, just to name a few of the many capabilities, mean that backups are fast.



Veeam can also leverage your investments in storage infrastructure to use hardware snapshots as the source for backups to further reduce production impact.

Veeam is the only backup product on the market that can be easily deployed to protect a single machine or scale up to protect the largest of environments. In fact, with only one instance of Veeam, the same product can protect a single system for a small remote office, or a large financial institution protecting 20,000+ machines with 8+ PB of data; again, with only one Veeam backup instance deployed.

8. Data Reuse and Digital Transformation

It is difficult to imagine a business that is not engaged in one or more digital transformation (DX) projects. DX is being leveraged as a method of expanding customer and partner relationships, delivering new products and services, and as a means of optimizing costs. The ability to quickly and easily reuse data to achieve better business outcomes is what is needed. However not all data protection solutions make leveraging your critical data for expanded use cases, such as application development, DevOps, DevSecOps, DataOps, forensic analysis, or reporting and analytics easy to achieve.

Veeam doesn't know what your digital transformation initiatives are, but we do know that it starts with protecting important data, making it highly available, ensuring proper policy-based data management, and providing the **ability to reuse data to fuel the business. Veeam pioneered Instant Recovery of data over a decade ago**, and we have been optimizing that capability ever since.

The ability to stand up many simultaneous machines, without requiring solid state drives (SSDs), separates Veeam from other products on the market.

Veeam combines instant recovery capabilities with data portability and cloud mobility, to provide the digital dexterity that modern, fast moving organizations need. Veeam removes dependencies on legacy systems and technologies that impede digital transformation.

9. Ease of Use and Reduced Complexity

Businesses need powerful data protection solutions. But solutions that are difficult to deploy and manage, that require many different piece parts, or that are a collection of acquired products that a vendor offers as a suite, lead to greater complexity and failure rates. Some backup products in the market require such unique knowledge and skills, that finding administrators for those solutions proves difficult or cost prohibitive.

Veeam has had long standing design goals of delivering solutions that are Simple, Flexible, Reliable and Powerful. Simple does not mean lacking features or capabilities.

- Simple means easy to deploy, configure, and manage. **A fast time to value.** Simple to extend. **Reducing complexity and operational management** (i. e. ease of use) has been one of the top drivers for switching backup products for over a decade.
- Flexible comes from the software-defined architecture described above, and from the broad ecosystem of partners that is detailed below.
- Powerful means fast, secure, scalable and future-proof. Veeam-patented Instant Recovery enables lightning-fast, mass recovery at scale in case of an outage. This, and many other powerful industry-first capabilities, enable our customers to achieve the most demanding recovery Service Level Objectives (SLO) while dramatically reducing data loss and downtime.



What about Reliable? The backup solution should reliably backup, and reliably restore critical data. Recall though that global survey data above shows that the number one single reason to switch backup products is to improve backup success and reliability.

Ease of use and reduced complexity aren't backup solution attributes that are nice to have, they are essential. Modern backup solutions should save you time and effort, while delivering reliable backup and restore capabilities. After all, this is what you expected when you implemented your legacy backup product(s). But if you're like many people in the global survey above, you found backup was neither reliable nor easy.

10. Strong Ecosystem of Partners

Almost nothing in the data center or in the cloud is an island. Interconnectedness is innate in today's hybrid-cloud, multi-cloud landscape. For most of us, the on-premises data center is very much a part of that reality as well. We can add the edge, such as remote and branch offices, work-from-home laptops, and soon IoT aggregation points to this mix as well. That means that deploying a backup solution that can meet a broad range of workloads, locations, infrastructure, service levels and budgets can be challenging. This is where ecosystems come in to play to extend the capability and value of the individual pieces that make up a modern backup practice.

Veeam has had a partner-first business model since the company's inception. **Veeam has a broad range of reseller, co-seller, platform, cloud, storage, global system integrators (GSI), and as-a-Service partners.**



One way that Veeam achieves this is through interfaces, such as the **Veeam Universal Storage API, Restful APIs, and PowerShell**. Veeam can integrate with your management solutions, such as **Ansible, Chef, Chocolatey, Puppet, and Terraform**, just to name a few. See github.com/VeeamHub for examples of Veeam community integrations.

Veeam is certified to run on a broad range of infrastructure components, all-in-one implementations, and pre-configured backup appliances.

For over a decade Veeam-powered Baas & DRaaS partners have delivered a variety of services across the world, ranging from simple backup extensions to complete "hands off" as-a-Service experiences. You can find a service provider that can meet your needs here: <http://vee.am/splookup>.

Veeam provides incredible choice in wherever, on whatever platform, and from whomever you would like to consume Veeam and the modern backup capabilities that are provided.

11. Cost Containment and Veeam Universal License (VUL)

Cost and licensing are not things that IT professionals want to think about. The reality is that cost matters, and that licensing models can become real impediments in your ability to deliver the backup services that your business needs. A fast-changing world, where workloads and deployment models are shifting can mean that organizations get stuck with shelfware, are left to deal with already poor performing legacy systems for longer periods of time, or worse yet, are not able to protect all of the company's vital data.

Veeam has always offered backup packages and bundles that fit every size of organization and budget. Veeam was first to market with CPU socket-based pricing at a time when legacy vendors were charging a significant price premium through capacity-based pricing. The issue was that data was growing much faster than compute requirements, so organizations saw their backup costs dramatically increase, making budget planning difficult and unpredictable.



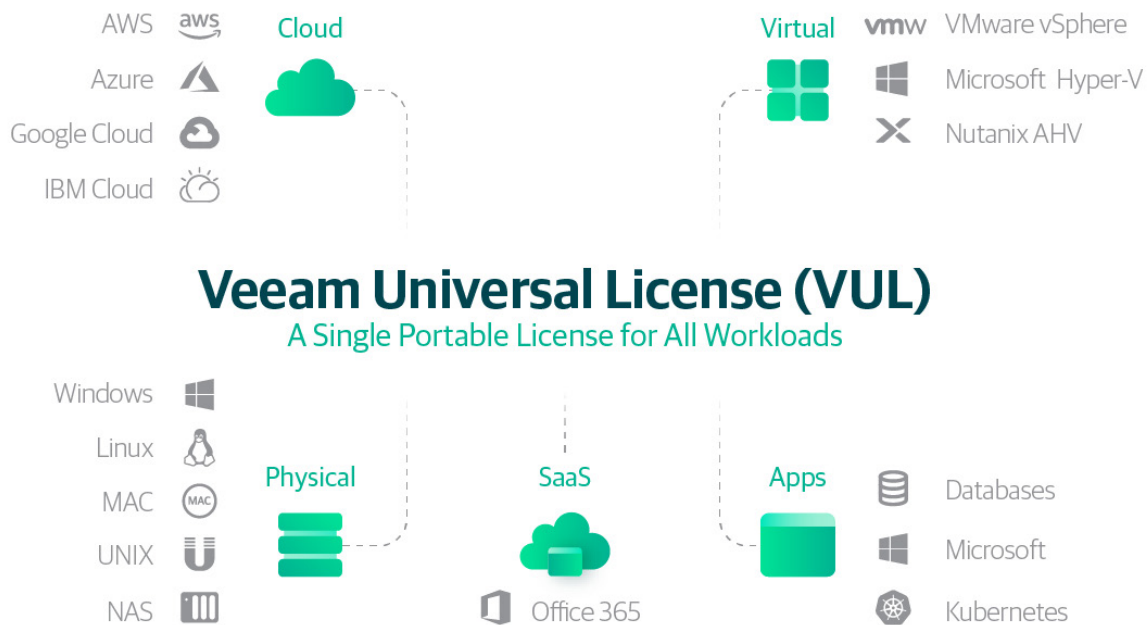


Veeam again leads the industry in response to backup cost concerns through a unique licensing model. The **Veeam Universal License (VUL)** is a flexible and transferable solution for protecting multiple, different workloads on premises and in the cloud.

VUL makes licensing easier than ever and avoids additional fees that other vendors may charge. VUL enables one transferable subscription license type to be used across cloud, virtual and physical workloads:

- Transferable across workloads and locations
- Move licenses on your own schedule
- Not product or workload-specific

VUL allows you to purchase the needed amount of workloads or instances, and to deploy those as you see fit. This avoids shelfware and means that you can get the best use out of your backup investment, even if your requirements change in the future.



Office 365 and Kubernetes backup requires a separate license and is not part of VUL.

12. Future Proofing and Vendor Viability

If we have learned anything from 2020, it's that the future can change fast. But it was always a best practice to have a backup solution that could flex and adapt to meet not only the current and anticipated needs, but also be able to address unforeseen future requirements. An extensible platform, with data portability and cloud mobility, along with easily transferable licensing are all a-must. Vendor viability becomes important as well, as the provider's long-term history, and especially the current financial health is key to ensuring that your trusted, strategic supplier for backup today can be counted on to serve as your strategic partner in the.

Veeam is one of only a few dozen software companies in any industry to achieve over a billion dollars (USD) in revenue. According to industry analysts such as Gartner and IDC, Veeam is gaining market share, and is the only major backup vendor to grow year over year to start this decade.

Veeam's financial health makes Veeam a strong and viable partner for your long-term backup needs.

Veeam is investing heavily in protecting future workloads, such as Kubernetes, acquiring Kasten for container-based backup in 2020. Veeam continues to invest heavily in new and enhanced products to help you modernize and meet your backup challenges today, and to be ready for the future.



Conclusion

There are many challenges which plague backup and data protection professionals, and far too many of these issues remain the same year after year, and decade after decade. We hope that you utilize these Veeam 2021 Modern Data Protection Best Practices for a decision framework, a checklist, to improve and modernize your backup practice.

Veeam provides a single platform for Cloud, Virtual, Physical to support all modern workloads on-prem and in the cloud including VMware, Hyper-V, and AHV, Windows, Linux and UNIX physical servers, NAS, AWS, Azure, IBM Cloud, Google Cloud and others from a single interface. With 400,000+ customers in 180+ countries, 25+ major and updated product releases in 2020, and two years in a row of achieving over \$1B (USD) in bookings, no other backup vendor has delivered as much new and enhanced product capabilities, or shown such strong financial growth and strength as Veeam.

It's time to expect more from backup. It's time for Veeam.

Download the NEW groundbreaking Veeam V11



NEW Veeam V11 –
[download](#) the free 30-day Trial

About the author



Dave Russell is the Vice President of Enterprise Strategy at Veeam Software. Russell has over 30+ years in the data protection industry, with past roles in product development and technical strategy at IBM Storage, and as an industry analyst at Gartner where he led the Magic Quadrant for Backup/Recovery.

About Veeam Software

Throughout the years, Veeam® has pioneered innovative solutions that enable businesses to meet modern data demands, achieving the highest customer satisfaction scores in the industry.

Veeam Platform is the most complete solution to help customers automate data management and ensure data availability. We have more than 400,000 customers worldwide, including 83% of the Fortune 500 and 69% of the Global 2000. Our customer satisfaction scores, at 3.5X the industry average, are the highest in the industry. Our global ecosystem includes 70,000+ partners; HPE, NetApp, Cisco and Lenovo as exclusive resellers.

veeam

#1 Backup and Recovery

NEW

Veeam Backup & Replication **v11**

200+ new features and enhancements including:



Continuous Data
Protection (CDP)



Reliable Ransomware
Protection



Amazon S3 Glacier
and Azure Archive



Expanded Instant
Recovery



Veeam-powered BaaS
& DRaaS