



Object Storage Innovation With Veeam

CUMULONIMBUS V



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Agenda

- How we got here
- Object Storage Timeline
- Object Storage in today's world
- Current state of object in the cloud
- Partners & Alliances
- V12 and beyond
- Demo Time
- Conclusion



How did we get here?

Cumulonimbus – throughout the years



Object Storage! The Future of Backup Destination?

AMERS EMEA

WATCH RECORDING

V11 has brought in more exciting innovations around object storage with enhancements to the Capacity Tier, a whole new Archive Tier and performance enhancements. We will be going deep...but focusing on the benefits to customers and partners with real world examples and demos.

[Click here](#) for session survey



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Veeam Cloud Tier glossary II



- Capacity Tier**
Name given to the extent on a Scale-out Backup Repository using an object storage repository
- Move mode**
Name given to the policy introduced in Update 4 that offloads data from sealed chains and has it in either Performance or Capacity Tier
- Copy mode**
Name given to the policy coming in v10 that immediately duplicates backup files from Performance to Capacity Tier once a backup job has completed
- Offload job**
Name given to the process that moves data from Performance to Capacity Tier
- Immutability**
Object Lock technology provided by Amazon in Amazon S3 and S3-compatible storage offerings prohibits block deletion until the expiration date is reached

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Cumulonimbus II – Cloud Tier Deep Dive & Best Practices

Back again from last year, join us in this fireside chat session as Anthony Spiteri and Dustin Albertson dive deep into the Veeam® Cloud Tier and discuss the best practices and design choices you should make. Veeam Cloud Tier lets users leverage object storage to infinitely scale out their on-premises storage to the cloud. This session will explore the architecture of Veeam Cloud Tier and Scale-out Backup Repository™. We will then dive deep into the components required and the strategies associated with off-site backups in v10. Discover how to leverage Cloud Tier's new copy mode. This session will allow for audience participation and an open discussion with the presenters while we delve into these topics.

- How to leverage Cloud Tier copy and tiering modes
- How to leverage Cloud Tier in disaster recovery situations
- Ways to leverage Cloud Tier that you have not even imagined



Dustin Albertson
Senior Cloud Solutions Architect
Veeam Software



Anthony Spiteri
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[Implementation Best Practices](#) [Veeam Backup & Replication](#)

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V12 Object Storage Enhancements

CUMULONIMBUS PART IV

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Object Storage Timelines

Brief History of Object Storage



1990s: Content-addressable storage (CAS) emerges to store and retrieve data based on its content rather than its location, which is a key concept in object storage.

CAS systems become popular for storing fixed content, such as archival data.

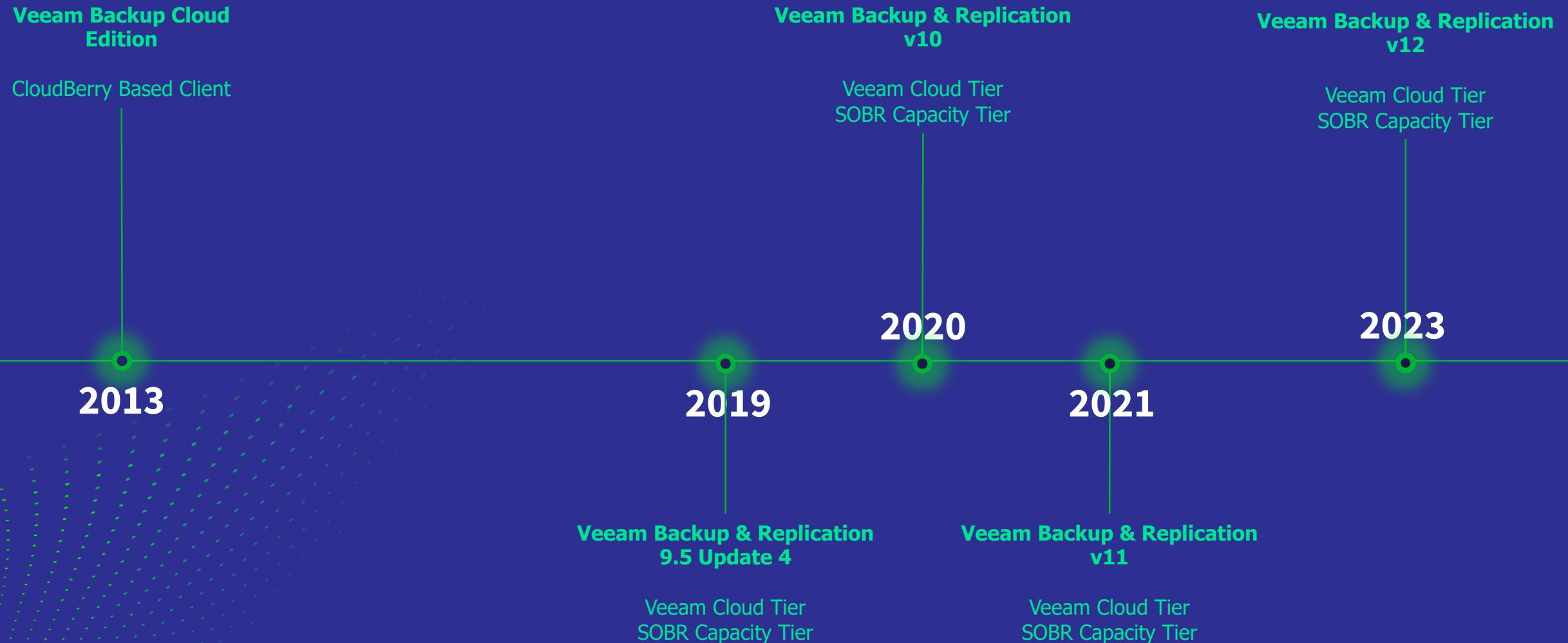
2010s: Object storage gains popularity due to its scalability, durability, and ability to handle unstructured data such as multimedia content, big data, and backups. Many vendors, both established and start-ups, enter the object storage market, offering various features and capabilities.

1989: Carnegie Mellon University's Andrew File System (AFS) introduces the concept of "vnodes," which are objects used to represent files and directories and can be thought of as an early form of object storage.

2006: Amazon Web Services (AWS) introduces Amazon S3 (Simple Storage Service), which is considered one of the first widely adopted commercial object storage services. S3 becomes a popular option for cloud-based storage, and other cloud providers follow suit by offering their own object storage services.

2020s: Object storage continues to evolve, with increased focus on performance, data management, and integration with other storage technologies such as file systems and block storage. Object storage becomes a critical component in modern data storage architectures, powering applications such as data lakes, content delivery networks (CDNs), and edge computing.

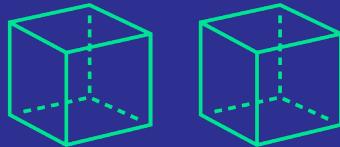
Reverse Roadmap of Veeam Object Storage





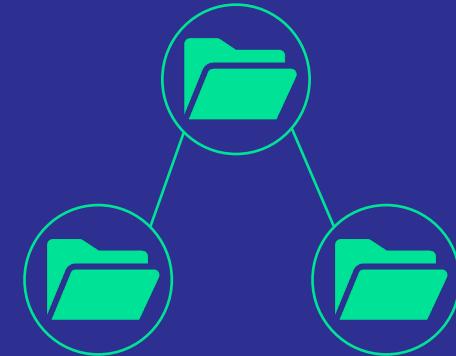
Object in today's world

Storage Types



Block Storage

Data stored in fixed-size ‘blocks’ in a rigid arrangement - ideal for enterprise databases



File Storage

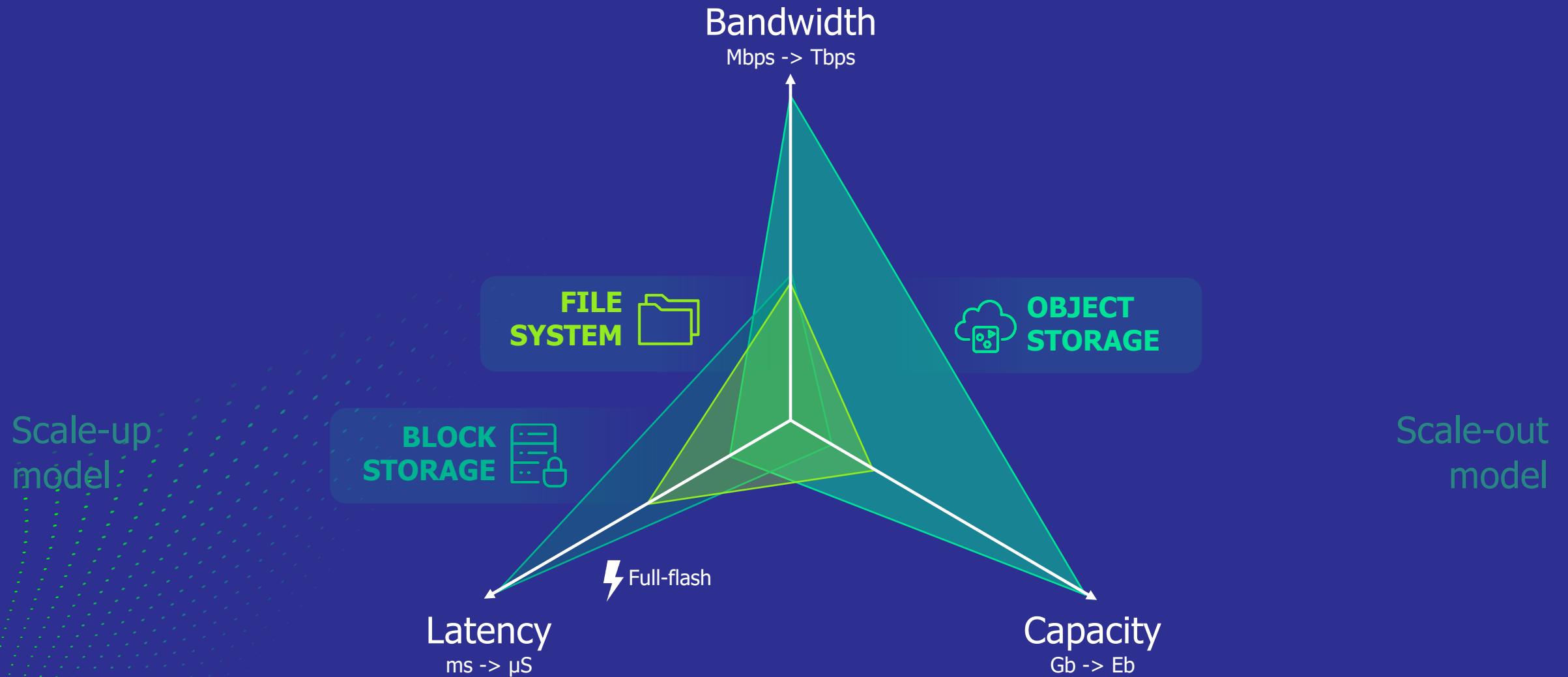
Data stored as ‘files’ in hierarchically nested ‘folders’ – ideal for active documents



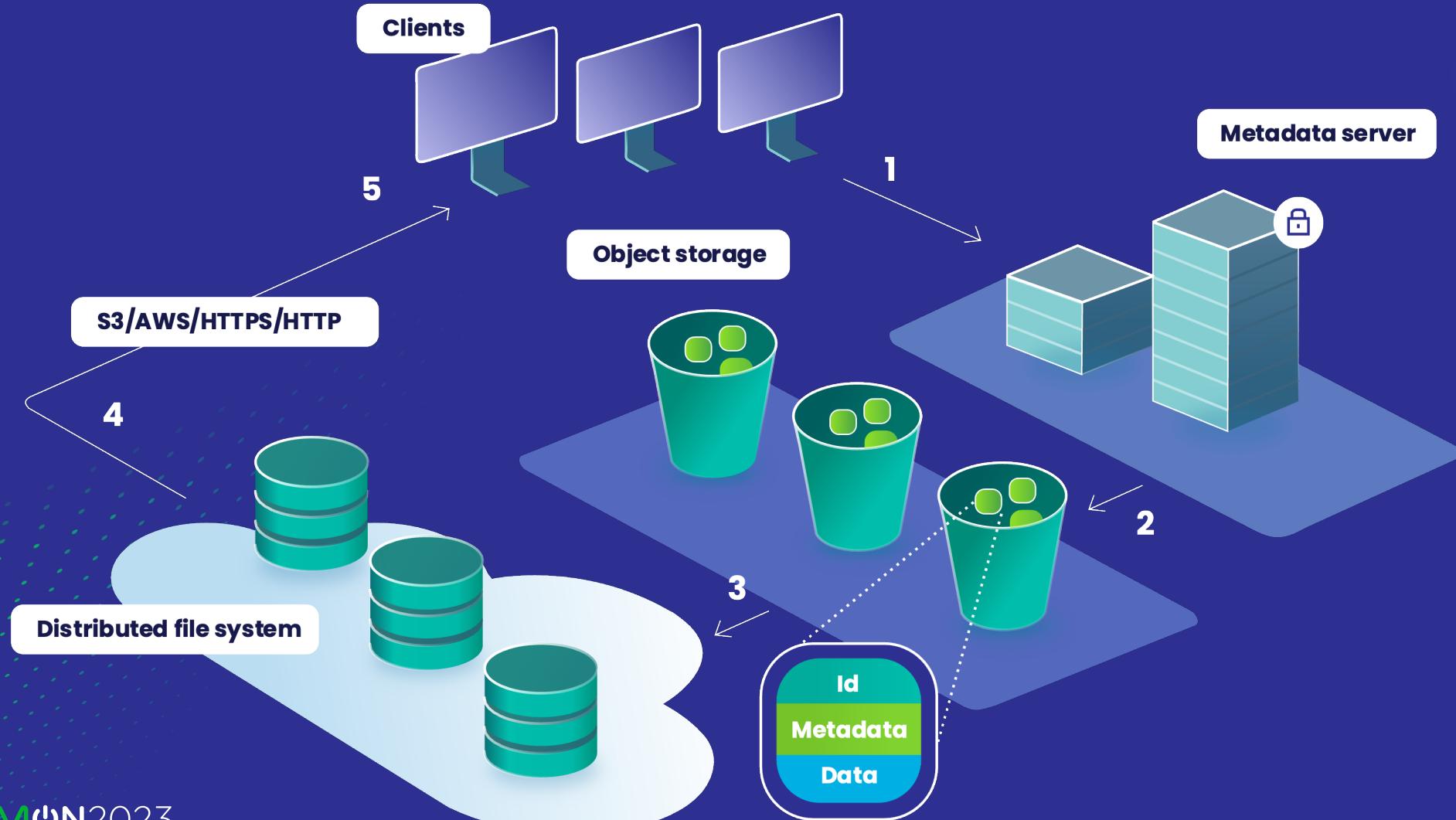
Object Storage

Data stored as ‘objects’ in scalable ‘buckets’ – ideal for unstructured big data, analytics, and backup/archive

Why direct to object storage?



Object Storage Design



Metadata Example



Type: X-RAY
Created: 09-10-2011
Location: f:\patients\S\Anthony_Spiteri\hand\right\
Owner: Dr. Dustin Albertson
Size:24.2M
Last Accessed: 09-12-2011



Type: X-RAY
Created: 09-10-2011
Owner: Dr. Dustin Albertson
Technician: Michael Cade
Size:24.2M
Last Accessed: 09-12-2011
Patient : Anthony Spiteri
DOB: 01-01-1971
Sex: M?
Injury Date: 09-10-2011
Injury Type: Fracture
Anatomy: Right Metacarpal
View: Top
Object ID: 507f191e810c19729de860ea
Retention:220147200(7 Years)
Archive = Yes
Description: Top Right Hand



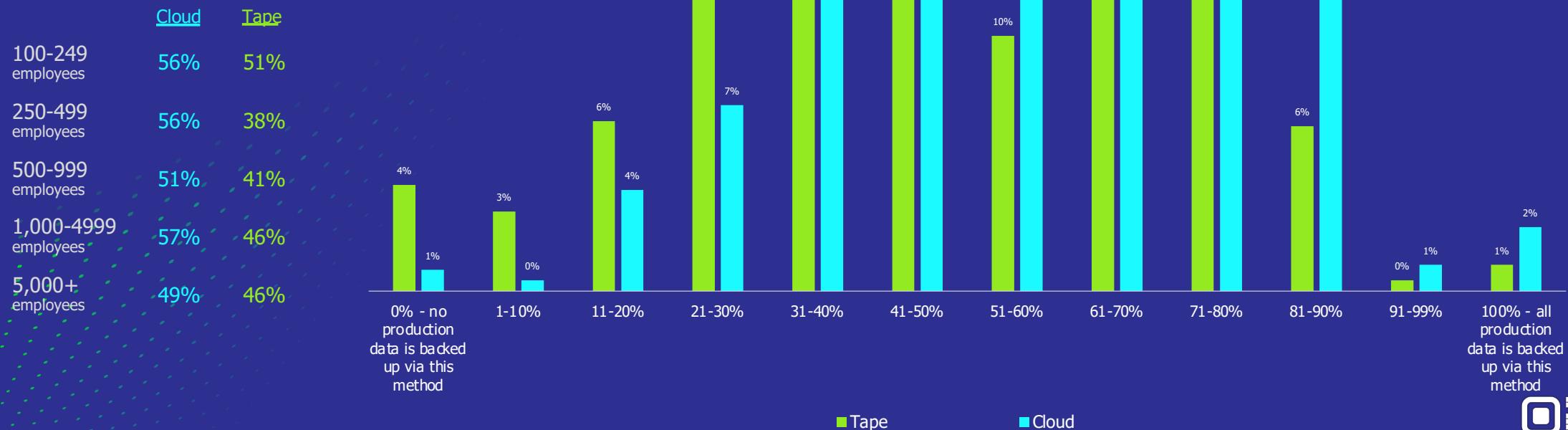
Current state of object in the cloud

Besides disk, what do you use for backups?



47%
of data goes to a tape
while
58% goes to a cloud

In addition to your disk-based backups,
what percentage of your production data is also backed up to **tape** and **cloud**?



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Source: Ransomware Trends Report 2023
<https://vee.am/RW23>



Current State of Object Storage



The Scale of Amazon S3 today

- Capacity and throughput Amazon S3 holds more than **280 trillion objects** and averages over **100 million requests per second**
- Events Every day, Amazon S3 sends over **125 billion** event notifications to serverless applications
- Replication Customers use Amazon S3 Replication to move more than **100 PB** of data per week
- Cold Storage Retrieval Every day, customers restore more than 1PB from the S3 Glacier Flexible Retrieval and S3 Glacier Deep Archive storage classes
- Data Integrity Checks Amazon S3 performs over **4 billion** checksum computations **per second**
- Cost Optimization On average, customers using Amazon S3 Storage Lens advanced metrics and recommendations have obtained cost savings 6x greater than the Storage Lens cost in the first six months of using it
- Flexibility Hundreds of thousands of data lakes are built on Amazon S3

Partners & Alliances

Partners & Alliances



Object storage is more than just cloud

- Veeam Alliance Technical Programs
 - Veeam Ready Program provides a solution qualification process to help Veeam Alliance Program partners meet Veeam functional and performance standards.
By attaining Veeam Ready status
- Cloud Partners
 - Tight relationships with the top cloud providers and product teams
 - Working together to help shape the future of object storage

Partners & Alliances



Quantum®



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veeAM
READY



Object

veeAM
READY



Object with
Immutability

RSTOR



redhat



SOFTIRON®

Synology®



ORACLE®



IBM



MINIO

QNAP®

Infortrend®

zadara

SwiftStack



HITACHI
Inspire the Next

Unofficial List



Integrated Object Storage

Integrated + Immutability

Amazon S3 (including GovCloud and ChinaCloud)

Amazon S3 Glacier and Glacier Deep Archive (for SOBR Archive Tier only)

IBM Public Cloud Object Storage (COS) (with immutability as of March 16, 2023) [UPDATED](#)

Microsoft Azure Archive Storage (for SOBR Archive Tier only)

Microsoft Azure Blob Storage (including Government Cloud)

Wasabi (cloud object storage)

Integrated

Google Cloud Storage (not compatible with Veeam Backup for Office 365)

Microsoft Azure Data Box

S3 Object Storage

Compatible + Immutability

Backblaze B2 (cloud object storage)

Ceph (14.2.22 or later, 15.2.14 or later, 16.2.5 or later) [COMMUNITY ENTRY](#) Currently [ISSUES](#) with the date format that prevents correct processing

Cloudian (7.2.x or later, 7.3 has significant performance improvements; 7.4.2.5 or later supports Veeam SOSAPI) [UPDATED](#)

Dell EMC ECS (ECS 3.6.2 or later with OL Patch)

DataCore Swarm (v14 or later)

EonStor GS (162G15 or later)

Hitachi HCP for Cloud Scale (1.5 or later, classic HCP non Cloud Scale version is a different product)

IBM COS Slicerstor on-prem (from ClevoSTM 3.17.2 incl. immutability, before compatible only starting with ClevoS 3.16.6.65) [UPDATED](#)

IDrive e2 Cloud Storage (cloud object storage) [VENDOR DECLARATION](#)

iTernity iCAS FS (from 1.8.0 compatible only, starting with version 1.12.0 and later compatible + immutability)

MinIO (2020-08-18 or later)

NetApp S3 StorageGrid (11.5 or later; add port number to the URL; use Integrated or F5 load balancer; needs careful IO load planning by vendor)

Nutanix Objects (3.0 or later)

NGX Storage Hybrid Series NGX H1000 (1.2.2 or later)

Object First (1.0.20.2742 or later support Veeam SOSAPI) [NEW](#)

OSNEXUS QuantaStor 5 (5.12.5 or later)

QNAP QuObjects (2.4.1443 and later)

OVHcloud Object Storage (cloud object storage) [NEW](#)

Quantum ActiveScale (5.7 or later)

RSTOR Space (cloud object storage – ask for v0.11.34-post5 15.Nov.2021 or later to have the Veeam patch included)

Scality Artesca (S3C 7.7.0.0 or later, use scality-s3 port 8000 to bypass load balancer – Artesca 1.7 or later supports Veeam SOSAPI) [UPDATED](#)

Scality RING (S3C 7.7.0.0 or later, use scality-s3 port 8000 to bypass load balancer)

Seagate Lyve Cloud (cloud object storage)

SoftIron HyperDrive (1343B70 or later with enabled online patching, Online patching mandatory to fix compatibility issues)

Spectra Logic BlackPearl S3 (from 2.0.0.5426 compatible only, with 2.0.0.5468 compatible + immutable or later)

SUSE Enterprise Storage (6 or later)

VAST Data Universal Storage (4.1 or later compatible only, starting with 4.5 incl. immutability)

Zadara VPSA Object Storage (20.01 or later)

Compatible

Alibaba Cloud Object Storage Service [UNDER INVESTIGATION](#) (not all regions are compatible)

AWS Snowball Edge

Backblaze B2 [VENDOR DECLARATION](#) (requires Veeam Backup & Replication 10a P20201202 or later)

Ceph (12.2.11 or later with RHCS-3.1+) [POSSIBLE ISSUES](#) ([date format](#))

Cloudian (7.1.3 or later, 7.3 has significant performance improvements; 7.4.2.5 or later supports Veeam SOSAPI)

Cynny Space SwARM Object Storage (3.16.49-r0 or later) [POSSIBLE ISSUE with strong consistency not enforced](#)

DataCore Swarm (v14 or later)

Dell Technologies ECS (ECS 3.2.2.0 or later)

FAST LTA Silent Brick G5000 (2.39.0.4 or later)

FUJITSU Hybrid IT Service Fjcloud-O (cloud object storage)

FUJITSU Hybrid IT Service Fjcloud-V (cloud object storage) [VENDOR DECLARATION](#)

Hitachi HCP (9.3 or later, requires Veeam Backup & Replication 10a P20201202 or later)

Hitachi HCP for Cloud Scale (1.3 or later, requires Veeam Backup & Replication 10a P20201202 or later)

IBM Cloud Object Storage (COS) Cloud

IDrive e2 Cloud Storage (cloud object storage) [VENDOR DECLARATION](#)

iland (cloud object storage)

Microsoft Azure Data Box

MinIO (2020-08-18 or later)

NetApp S3 StorageGrid (11.1.3 or later; add port number to the URL; use Integrated or F5 load balancer; needs careful IO load planning by vendor)

NexentaEdge (8b5a181.5 Oct 2018 or later)

Nutanix Objects (3.0 or later)

Object First (1.0.20.2742 or later support Veeam SOSAPI) [NEW](#)

OpenStack Swift S3 (Rocky 2018 or later)

Oracle Cloud Infrastructure (OCI) Object Storage (cloud object storage) [NEW](#)

Pure Storage FlashBlade (2.2.15 or later)

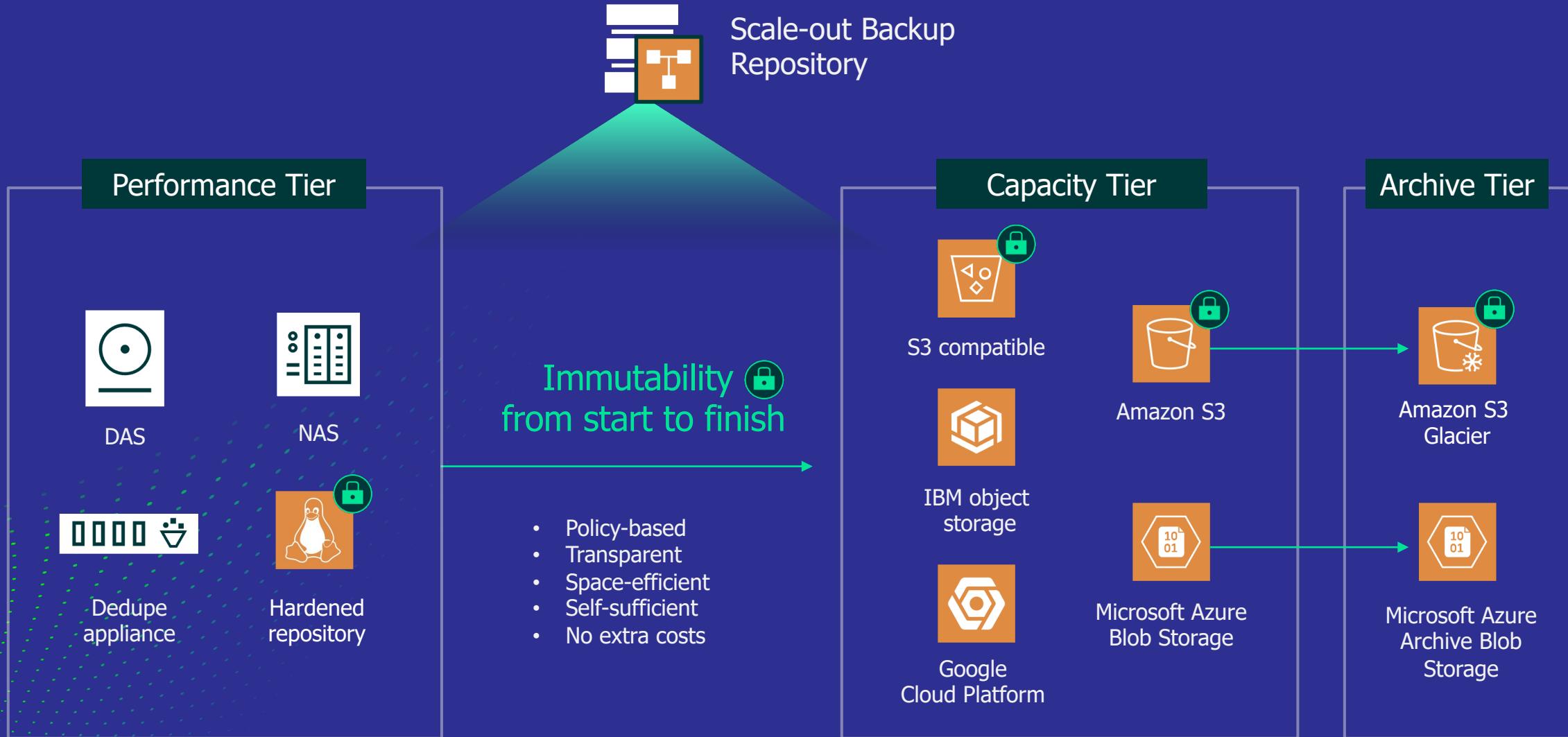
Pure Storage StorReduce (4.2.8 or later)

Quantum ActiveScale (5.5.3 or later)

Red Hat Ceph (3.1 or later)

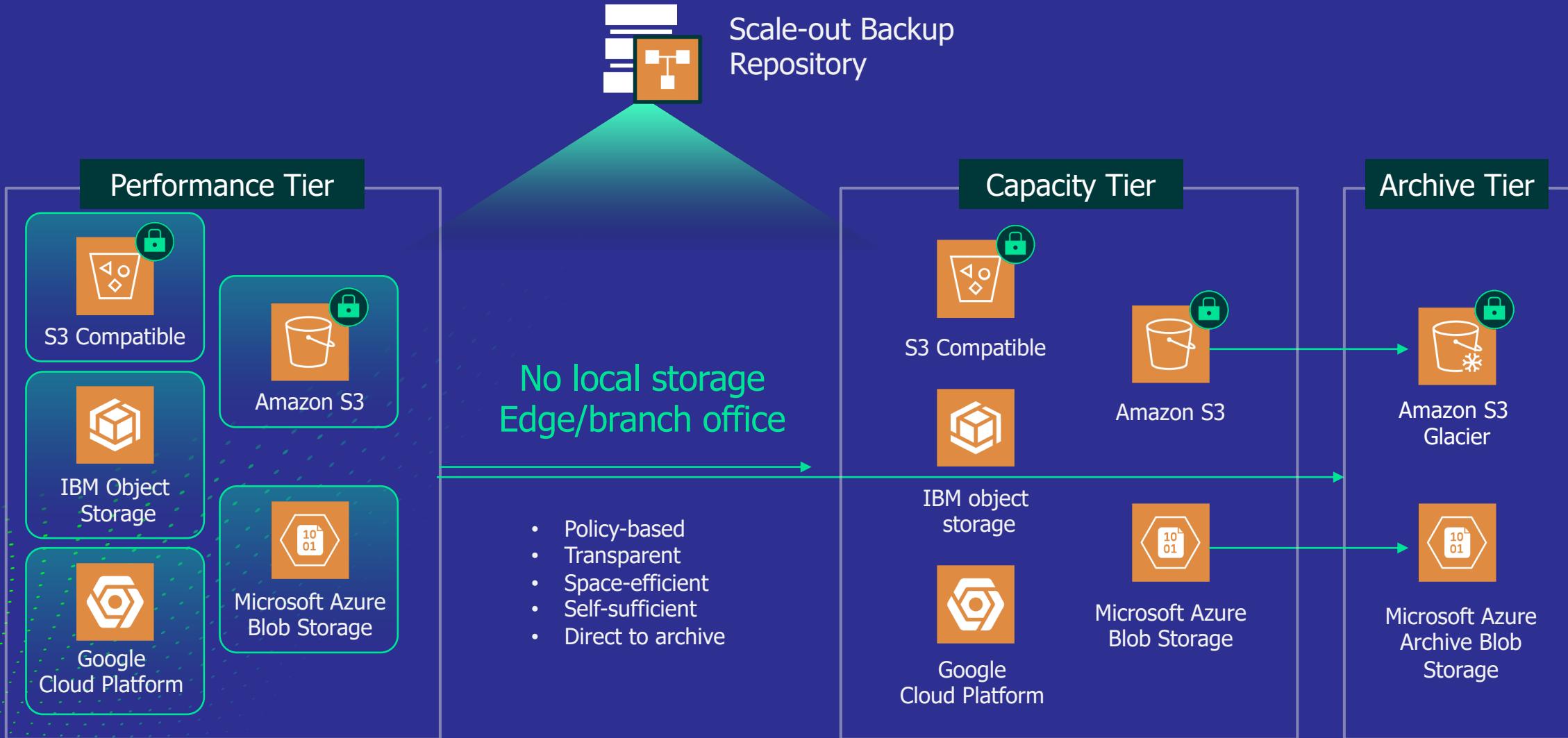
V12 and Beyond

Scale-out Backup Repository



Scale-out Backup Repository

OBJECT STORAGE EVERYWHERE





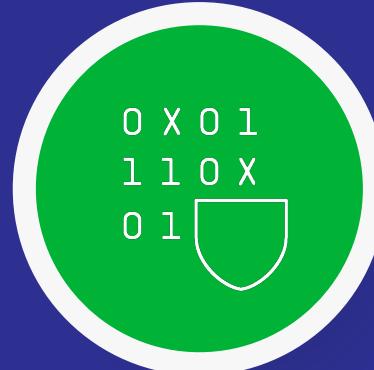
Our next
release



Backup of Object Storage



Ransomware Detection



Enterprise Security

Backup of Object Storage



[Backup of S3 Object Storage](#)

73 posts

◀ 1 2 3

As this internal forum post indicates, more and more customers are storing their unstructured data on object storage and desperately need a solution to back it up.

[Veeam Backup & Replication 12a will deliver:](#)

- Backup data FROM object storage to Veeam repositories or directly to tape
- Immutability, backup copy, object versions archive
- Restore entire buckets or selected objects only (including Compare mode)
- Licensed in the same way as NAS Backup

Technology Preview at the end of this month – really look forward for some real-world feedback

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DEMO TIME!!!!

Placeholder

Dustin to do demo on metadata and how to useful it is.

Search for objects using metadata using aws cli.

Conclusion



Thank you

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