Leveraging the Growth of Unstructured Data with IBM Cloud Object Storage

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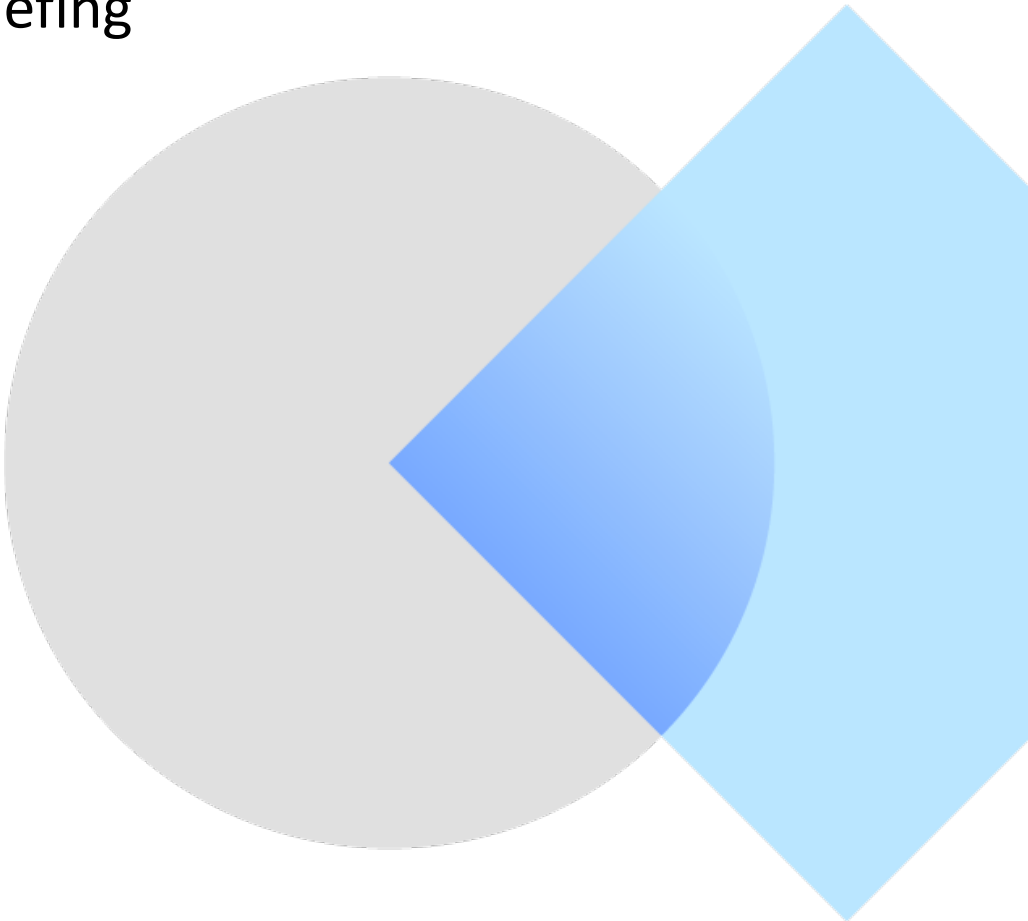
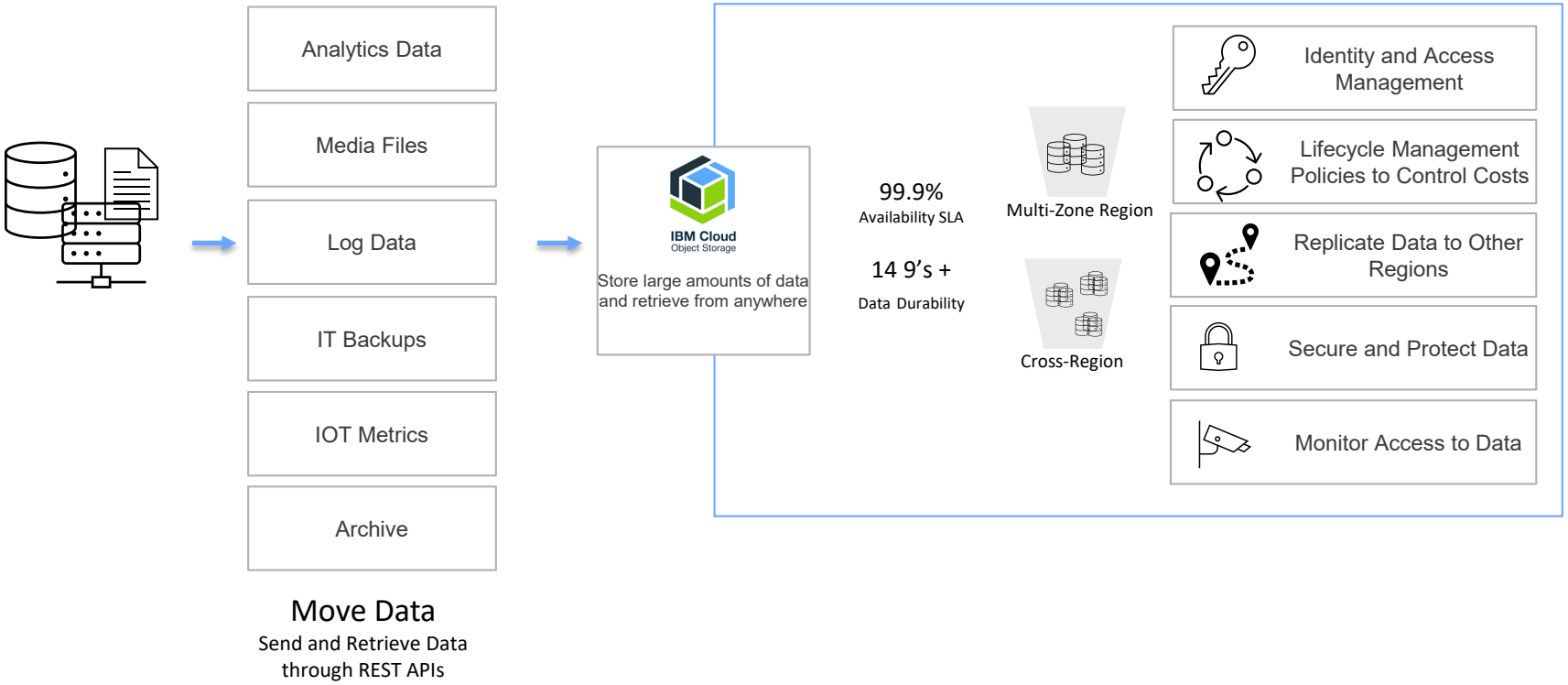
IBM Cloud Platform - IDC COS Briefing

AGENDA

- COS Overview
- COS Use Cases
- Promotions
- Q/A



IBM Cloud Object Storage Overview



Cloud Object Storage: The foundation for IBM Cloud

Scalability with virtually no limits for always-on availability

Easy to scale capacity or performance

Security built-in for trust and compliance

- Encrypted data with our keys or yours
- Identify Access Management
- Lockable WORM data

Simplicity of the cloud

- Industry standard API
- Access data concurrently from any location
- Always on-line

Savings

- Low cost, flexible tier offerings
- Native high-speed file transfer (no charge for ingress)
- Cross Region all-inclusive pricing, no additional charges for multiple regions

COS Functionality

Take Action on Data

- Static Web Hosting
- *IBM Data Engine*
- *Event Notifications*
- *Code Engine*

Manage Costs

- Smart Tier
- Object Expiration
- Bucket Quota
- Cost Estimator

Control Access

- Public, Private, and Direct Endpoints
- *IBM Identity and Access Management*
- *IBM Context-Based Restrictions*

Monitor Your Data

- Cloud Console
- *IBM Cloud Monitoring*
- *IBM Cloud Activity Tracker*

Data Where You Need It

- Object Replication
- IBM Cloud Satellite
- *Mass Data Migration Service*

Secure Your Data

- Always on Encryption
- Object Versioning
- Object Immutability
- *Security and Compliance Center*
- *IBM Key Protect (BYOK)*
- *IBM Hyper Protect Crypto Services (KYOK)*

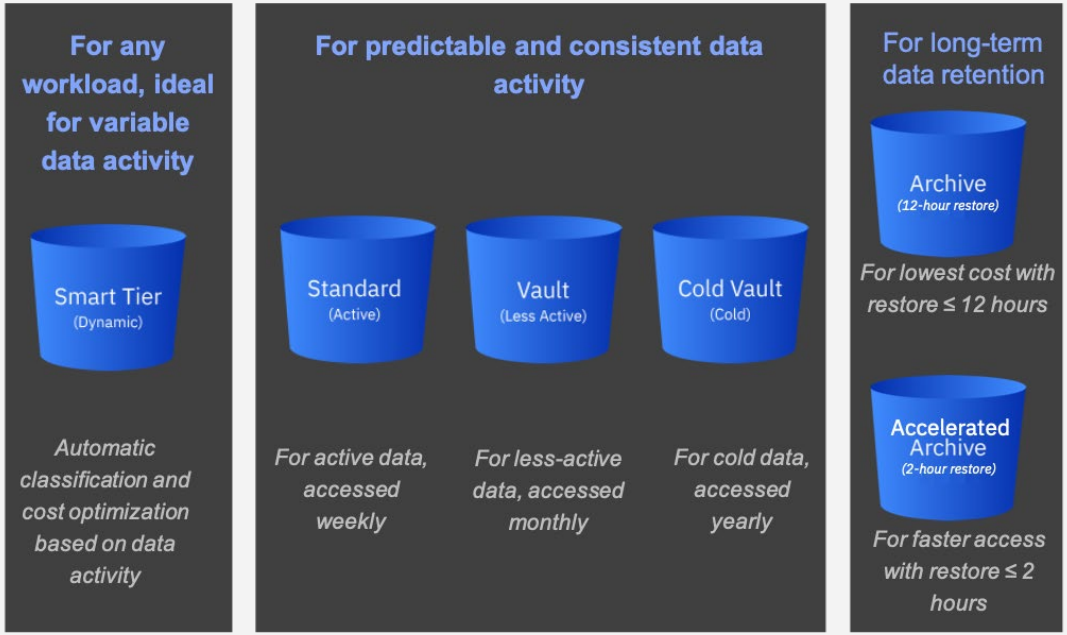
*Native to COS

**Integrations*

Cloud Object Storage: Storage Tiers & Lifecycle

- Designed for different data access patterns and priced at corresponding rates
  - **Smart Tier -** storage class designed for simpler pricing structure and automatic cost optimization
  - **Standard -** for active data (accessed weekly)
  - **Vault -** for inactive data (accessed monthly)
  - **Cold Vault -** for cold data (accessed yearly)
- Supported with **Data Lifecycle and Cost management features**
  - **Archive:** Set policy to move rarely accessed data to the lowest cost tier with 2 or 12 hour restore latency
  - **Expiration:** Set policy to regularly purge the stale data by age or on a specific date
  - **Versioning:** to protect against accidental deletion or overwrites of objects by saving every version of an object
  - **Quota:** to manage client budget by enforcing a capacity limit for a bucket

IBM Cloud Object Storage offers Flexible Storage tiers and Archive for enterprise workloads

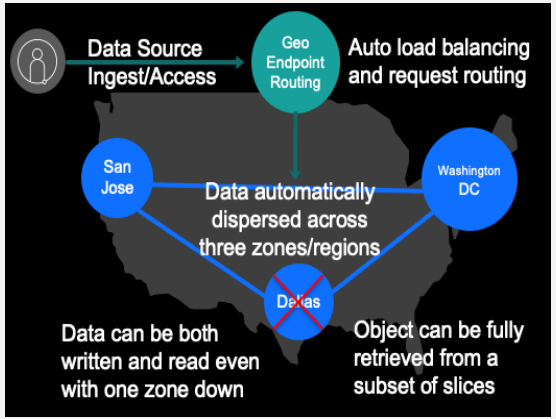


Cloud Object Storage: Resiliency, Compliance, and Security

Foundation for data resilience:

Distributed failure zones: IBM COS allows enterprises to establish Multiregional data redundancy

- Multi-Zone Regional (MZR) and Cross Regional worldwide locations
- Designed to protect data and maintain availability
- Redundant network paths and redundant system components
- Built for data durability (14 9's)



IBM COS also boasts a list of compliance certifications

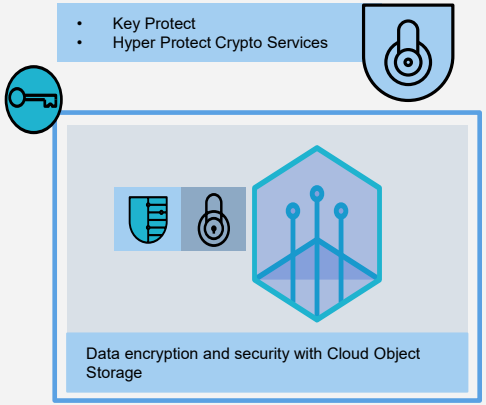
- International Organization for Standardization (**ISO**)
- System and Organization Controls (**SOC**)
- Payment Card Industry Data Security Standard (**PCI DSS**)
- Validated Health Insurance Portability and Accountability Act (**HIPAA**) Security and Privacy
- Immutable Object Storage for stringent requirements around long term retention of data for **SEC 17a-4**
- Validated status for IBM Cloud for Financial Services
- General Data Protection Regulation (**GDPR**) ready
- **FedRAMP High** Federal DCs

Access & Policy Management

- Integration with IBM Cloud Identity and Access Management **(IAM)** gives you ability to control access to your IBM cloud resources
- **Object Storage Firewall** capabilities further limit access to trusted networks in your enterprise cloud storage environment
- Integration with IBM Cloud **Security and Compliance Center**

Data security and compliance features

- All objects stored in IBM COS are encrypted by default.
- Organizations can manage their own encryption keys or use **IBM Key Protect** (Bring Your Own Key) and/or IBM **Hyper Protect Crypto Services** (Keep Your Own Key).



Cloud Object Storage Developer Capabilities

Tagging

Tag objects with key-value pairs to classify data, identify data owners, or specify the content of the object.

Event Notifications/Code Engines

Trigger custom code in Cloud Functions when an event occurs on your COS bucket

Terraform

Provision COS resources using this well adopted automation tool for cloud infrastructure management

APIs, SDKs and CLI

S3 based Datapath API. COS supports Java, Python, NodeJS, and GO SDKs as well as a native CLI. SDKs simplify the onboarding experience for new users and applications

Static Web

Buckets can serve as a whole website, removing the need to run a separate web application server

Why IBM Cloud Object Storage/ IBM Cloud ?

Easy to Build and Integrate

- ✓ Easy partner centric integration via our industry standard APIs and SDKS
- ✓ Ecosystem partners are using Cloud Object Storage on IBM Cloud to rapidly build solutions and reach new markets
- ✓ Flexible pricing and enterprise reach to build and deliver solutions at cloud scale
- ✓ Partners can leverage our cloud native services combined with integrated analytic capabilities to deliver end to end solutions to their customers
- ✓ Strong partner program and getting started assistance
- ✓ Pricing plans to help manage cost, data lifecycle & cost controls (versioning, expirations, quotas)
- ✓ Regulatory Data Controls , Security and compliance policies
- ✓ Integrated with other IBM Cloud Services (Compute runtimes and Platform Services)

Superior Architecture and Design

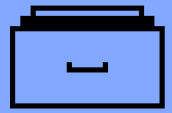
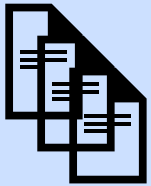
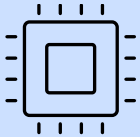
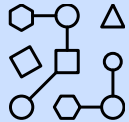
- ✓ Native regional or cross-region HA with erasure coding means no need to spend 2x for replication .
- ✓ 14 9’s+ data durability
- ✓ Smart Tier optimizes cost without moving your data
- ✓ Archive Policies and Lifecycle
- ✓ Advanced encryption options with Highest level of encryption using - FIPS 140-2 Level 4
- ✓ Built in Resiliency with Multi Zone Regions and Cross Region

IBM Cloud Object Storage
"Cloud" Object Storage Capabilities Comparison

Object Storage Capability	IBM Cloud Object Storage	Amazon S3	MS Azure Blob Storage	Google Cloud Storage
Single-region availability & data durability	✓	✓	✓	✓
Inherent multi-region availability & durability	✓	✗	Limited Access. R/W Primary Site ONLY	✓
Immediate data consistency for both single-region & multi-region services	✓	✗	✗	✗
On-premises object storage systems	✓	✓	✓	✗
Hybrid object storage deployments	✓	✓	✓	✗
Support for multiple APIs & open standards	✓ S3 API	✓ S3 API	✗ Azure API	✓ Google HTTP API, S3 API

IBM Cloud Object Storage Competitive Wiki at: http://ibm.biz/Bd4nKY

Cloud Data Use Cases

 Backup	 Archive	 NAS to Cloud	 Migration
 Content Store/Management	 Cloud Native	 Modern Apps/ IoT/ SaaS	 Analytics

Content Store, Backup & Archive Modernization
How to Sell? – Partner Solutions

Content Store/CDN/CDW

LucidLink

BASE media cloud

LUMEN®

CLOUDFLARE

teradata.

Cloud Enabled NAS
(NAS to Cloud, Enterprise Sync and Share, NAS Archive)

komprise

panzura

NASUNI

ctera

Data Protection& Backup with Cloud Object Storage

IBM Spectrum Protect+

IBM Spectrum Protect

VEEAM

rubrik

VERITAS

COMMVAULT

Active Archive/ Content Management

EMC² DELL Technologies datadomain

NetApp

IBM FileNet Content Manager

MERGE An IBM Company

IBM Spectrum Scale

IBM System Z

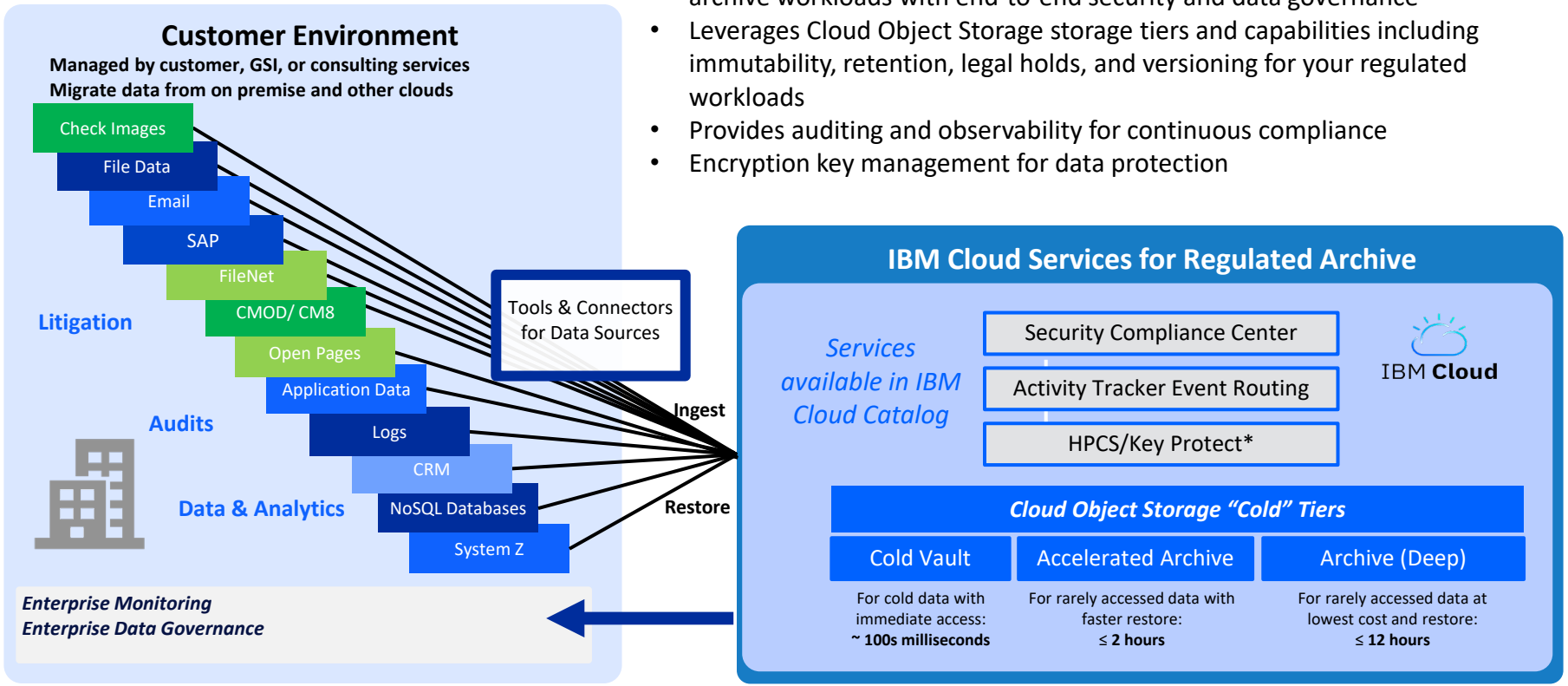
Content Store, Backup & Archive Modernization
Use Case Patterns

	1 Content Store	2 Backup & Data Protection	3 Regulated Archive
Use Case Overview	COS as origin store for content distribution networks and other video editing/multi-media services	Backup critical applications to COS for data protection and availability	Long term archive of regulated datasets infrequently accessed
Target Industry	Media and Entertainment	Financial Services, Government, Healthcare	Financial Services, Healthcare
ISV Partners	LUMEN, LucidLink, BASE media cloud, CLOUDFLARE	COMMVAULT, VERITAS, VEEAM, IBM Spectrum Protect	FILENET, IBM CMOD, NICE, Hyland

Regulated Archive – Overview

Secure resilient cloud-based data storage for archival of on-prem and/or cloud data

- A solution pattern leveraging FS Cloud Validated services with FS Cloud Controls to provide best in class enterprise solution for your regulated data archive workloads with end-to-end security and data governance
- Leverages Cloud Object Storage storage tiers and capabilities including immutability, retention, legal holds, and versioning for your regulated workloads
- Provides auditing and observability for continuous compliance
- Encryption key management for data protection



Use Cases – Customer Wins (Under NDA)

1 Content Store

LUMEN

Moved CDN Network to IBM Cloud with COS as Origin Store.

Expanded their footprint by 250% and opened new geographies in APAC and Latin America

zenfolio

Moved media storage service to IBM COS serving thousands of customers

"We found that IBM Cloud Object Storage represented by far the best value, coming in at 45 percent and 33 percent more cost-effective than competitors."

2 Backup & Data Protection

MOVIUS

Moved to IBM Cloud to provide Secure Mobile Communications. Uses COS as target for application backups and data resiliency.

Solution saved Movius $75,000 in data protection costs annually

any.cloud

Multicloud service provider expands globally with IBM Cloud

""Preventing data loss and breaches was critical… which is why we chose IBM Cloud"

3 Regulated Archive

Large US Bank

Moved archived documents from expensive on-prem file and database systems to cloud.

Customer organized files using tags/metadata attributes and achieved cost efficiencies

Large Health Provider

COS as long term, high growth archive for regulated data needing 15+ year retention

Business Partner Promotion - **$1500** Free COS

Step One

Complete Submission Form for Promo

IBM Cloud Object Storage is a push-button deployed cloud storage service and is available in IBM Cloud global data centers. It offers leading data protection, high durability and fast access to your data. You can use it to store and protect data with easy-to-use management features to organize your data and to configure finely tuned access controls

We are offering new clients and current clients with new storage workloads a USD 1500 credit to be applied over a 90-day period to store your data in IBM Cloud Object Storage. This is the monthly equivalent of 10TBs of storage, 2TNs of public egress (if downloading data is needed), 1 million write requests and 10 million read requests. These numbers can vary based on unique needs, such as how much data is stored and downloaded and how often it is accessed.

Unlock your USD 1500 credit today!

To receive your code, please complete the following form and return this page to kwilson@ibm.com.

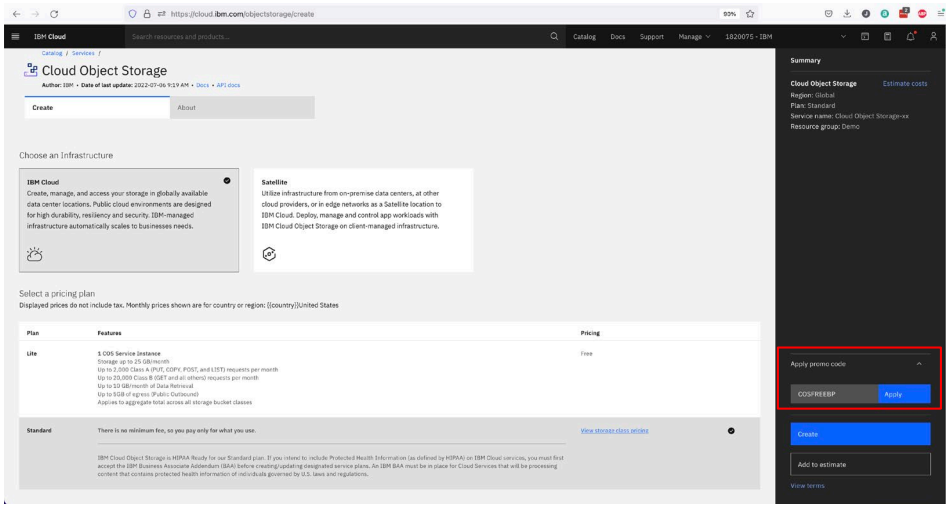
Company Name	
Solution Name	
Administrator Name (first last)	
Administrator email	
Phone	
Business Partner Name	

This offer is subject to availability and is valid for the IBM Cloud Object Storage Standard Plan (*Note:* This is in reference to the Standard Plan vs. Lite Plan, not Standard vs. other storage classes). This offer can be used with Standard, Smart Tier, Vault or Cold Vault storage classes. Be sure you activate the promotional code to get the credit within the 90-day period. There is a limit of one promotion code per customer account. The USD 1500 credit is for use with this offer only, not to be applied to other offers. This offer cannot be applied to data stored in IBM Cloud Object Storage Achieve tier.

Unlock your USD 1500 credit today!

Step Two

Apply Promo when Creating Standard COS Instance



https://www.ibm.com/cloud/blog/announcements/ibm-cloud-object-storage-promo-offer

Next steps for Partners

- Check Out Marketing Page and Cloud Docs
- Leverage IBM COS Sales Kit (Seismic)
- Engage SMEs (Product Managers and Resources)
- Utilize MyDM Campaign for Cloud Object Storage

Try the IBM Cloud Object Storage **Hands On Labs** as part of the Open labs at no cost.

Try IBM Cloud Object Storage for free with one of our promos: **$1,500 USD credit** for 90 days **(**use code **COSFREEBP), or request a $6,000 or $15,000 promo for select customers.** See **IBM Cloud Object Storage Promos** offer details

Cloud Masterclass for partners

Twice a month, from Jul to Sept, Thursdays, 10AM EST
Targeting partner sales and presales

Date	Topic	Speakers	Registration
July 14	Modernize Power workloads without Re-platforming **Watch OnDemand now**	Ming Christensen – Power VS Product & Eapen Valakuzhy–Global Sales	https://ibm.biz/CloudPartnerMasterclass1
July 28	Maximize business continuity with VMware in the cloud	Debbie van Zyl, Product Manager - VMware Resiliency Solutions David Mitchell, Product Offering Manager	https://ibm.biz/CloudPartnerMasterclass2
Aug 11	Top 3 use cases for cloud object storage	Riz Amanuddin, Program Director IBM Cloud, Jordan Freedman, Product Manager - IBM Cloud	https://ibm.biz/CloudPartnerMasterclass3
Aug 25	**Guide your clients deploy Desktop as a service (DaaS)**	**Prem D'Cruz, Product Manager – IBM Cloud, Akil Bacchus, Technical Solution Lead, IBM Cloud**	**https://ibm.biz/CloudPartnerMasterclass4**
Sept 8	IBM Cloud Unified Key Orchestrator: Multi cloud security	Rich Larin, GTM and Product Management, ZaaS	https://ibm.biz/CloudPartnerMasterclass5
Sept 22	IBM Cloud VPC	Chris Carter, Senior GTM Product Manager, Virtual Servers	https://ibm.biz/CloudPartnerMasterclass6

Thank you!

Find Out More

https://www.ibm.com/cloud/object-storage

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Backup

Replication

Replicate your data via policy

Description

Clients can replicate objects (and their respective metadata and object tags) across Cloud Object Storage Regions for reduced latency, compliance, security, disaster recovery, and other use cases.

How Replication works?

- Set replication policy at the source bucket to define rules for automatic, asynchronous copying of objects from a source bucket to a destination bucket in any COS region
- Both the source and destination buckets must have versioning enabled
- The original meta data of the source object will be retained for the replica
- You can setup bi-directional rules to keep two buckets in sync
- Any new version or new object created in the source bucket will be replicated
- Replication of existing objects or versions is supported via the in-place PUT COPY api

Use Cases

- Setup destination buckets across different Cloud regions to meet Disaster Recovery requirements or for Backup against accidental deletion
- Meet compliance regulations for storing data in a certain region/country by defining replication rules to store replicas in destination buckets within the allowable territory
- In use-cases requiring low-latency data, it is desirable to replicate data into the Cloud regions that are geographically closer to the end-users or where data is consumed
- Replicate log data from multiple buckets that are across different Cloud regions into a single bucket for a single source for data processing.

COS for IBM Satellite

Managed COS on your premises

What is Cloud Object Storage for IBM Cloud Satellite?

Cloud Object Storage for IBM Cloud Satellite is a managed Cloud Object Storage service for our clients, on the infrastructure of their choice, closer to their applications and data sources:

- on-premises
- edge or
- multi-cloud location

Feature highlights

Consistent public cloud experience on client's own infrastructure

Provides consistent user experience with the public Cloud, managed and deployed using:

- COS UI, APIs and SDKs
- Feature parity with public cloud (e.g., versioning, expiration, etc.)
- Identity management and access control with IAM in public cloud
- Data at rest encryption and integration with IBM Key Protect for IBM Cloud key management system (in public cloud)

Integrated and availability

- Available wherever base Satellite can be deployed.
- Satellite location is tethered to the closest IBM public cloud region for orchestration and control
- Tether Satellite Instances to us-east, us-gb, us-de and jp-tok

Sizing and Pricing

- Available in T-shirt sizes ranging from 12TB to 96TB
- Flat monthly rate based on T-shirt size (from $0.02 to $0.04/GB/month)

Use Cases

- Keep data located near application infrastructure to meet low latency requirements
- Meet data residency requirements while still benefiting from cloud services
- Use as data store for applications and services running on Satellite
- Collection point for data generated in real time

Context-Based Restrictions

Provide customers self-serve access to audit logging for all API operations

Description

Use IBM Context-Based Restrictions to set access policy restrictions on your buckets. Restrictions can include allowed network types and specific IP addresses

Availability

Available worldwide for new and existing buckets

Enabling Context-Based Restrictions

To add a new restriction, you must first define an allowed Network Zone. You can create a Network Zone within the Context-Based Restrictions service UI. Create new CBR rules and add your Network Zones

How CBR works?

- A user must create a Network Zone with allowed Network types and/or specific allowed IP addresses
- After creating a Network Zone, add this to new CBR rules to enforce access restrictions on your buckets
- Check IAM Activity Tracker logs to see information about denied requests due to CBR enforcement

Rules

Define the access restrictions that are applied to specific resources.

Contexts

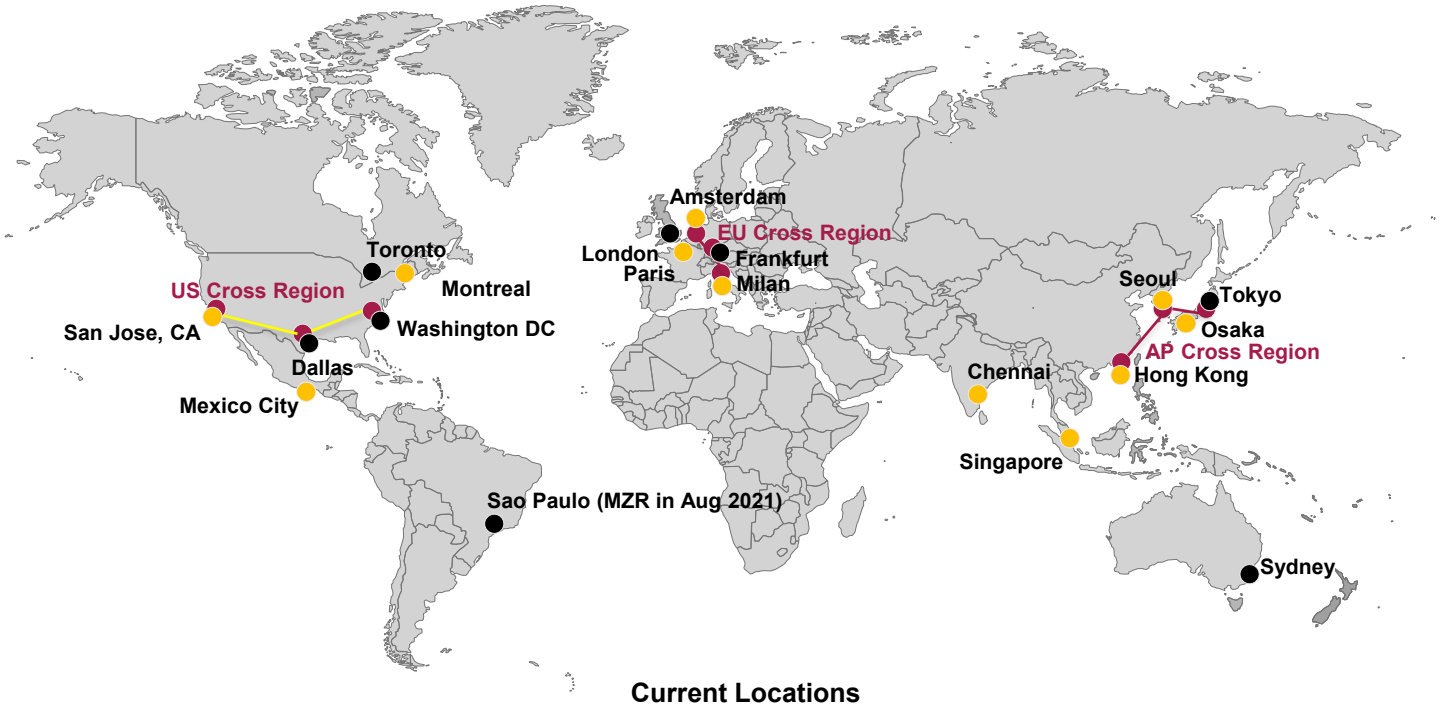
Define an allow list of network locations, like endpoint types or network zones, that determine when a rule should be applied.

Secure access

For an additional layer of protection to your cloud resources, use both context-based restrictions and IAM policies.

IBM Cloud Object Storage spanning the globe with coverage

- **Cross Region:** Your data is stored across three regions within a geography for highest availability and resiliency.
- **Regional:** Your data is stored in multiple data center facilities within a single geographic region for best availability and performance.
- **Single Data Center:** Your data is stored across multiple devices in a single data center for when data locality matters most.



Current Locations

- **Cross Region:** United States (Dallas, Washington DC, San Jose), Europe (Amsterdam, Frankfurt, Milan), Asia Pacific (Hong Kong, Tokyo, Seoul)
- **Regional:** US East (Washington DC), US South (Dallas), TOR (Toronto), EU GB (London), EU DE (Frankfurt), JP-Tokyo, AU-Sydney, SAU (Sau Paulo converting from single site to MZR Aug 2021)
- **Single Data Center Offerings:** Chennai, Amsterdam, Seoul, Montreal, Mexico City, San Jose, Milan, Hong Kong, Paris, Singapore, Osaka
- **Federal**: Washington DC and Dallas

Quota Management

Manage your costs by enforcing a usage limit on your COS bucket

Description

This feature allows customers to control their costs by allocating a bucket Quota to enforce a usage limit (in bytes) for their internal departments and ensure approval mechanisms by sending out alerts when Quota limits are reached.

Availability

Available to all IBM Cloud customers in all IBM resiliency choices by 1Q21

How it works?

- A COS user (with administrator privileges) can set a hard Quota on a bucket
- No additional writes/uploads can be done in the bucket unless bucket Quota is extended, or existing data is deleted to move usage below the quota limit.
- Users can provision a Sysdig instance to configure an alert when the bucket usage reaches a certain threshold (say 80%) of the quota.

Object Versioning

Protects your data against accidental deletion or overwrites

Description

Object Versioning allows COS users to keep multiple versions of an object in a bucket to protect against accidental deletion or overwrites. Versioning allows for easy recover from both unintended user actions and application failures.

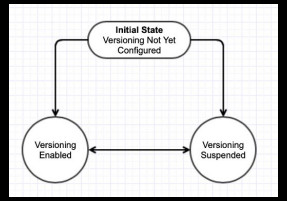
Availability

Available to all IBM Cloud customers in all IBM resiliency choices by 2Q21

Enable/Suspend Versioning

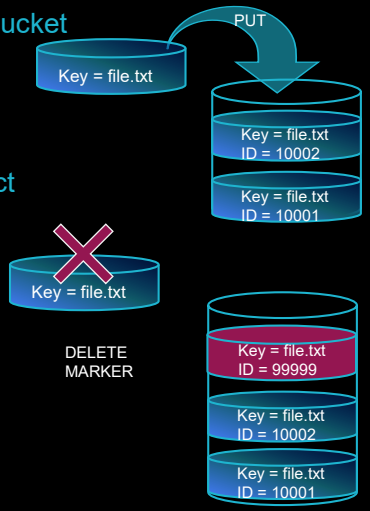
The buckets can be allowed to be in one of three states:

- Non-versioned (the default)
- Versioning-enabled
- Versioning-suspended



How Versioning works?

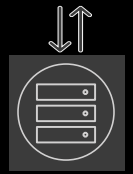
- Keep multiple versions of an object in the same bucket
- Versioning enabled – each version ID is unique
- Versioning suspended – version ID is 'null'
- If you overwrite an object, it results in a new object version in the bucket.
- You can always recover the previous version.
- If you delete an object, instead of removing it permanently, a delete marker will be inserted (as the current object version).



Manage costs of multiple versions with Lifecycle rules

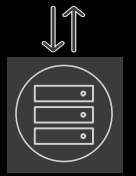
- Setup Archive rules to transition current or noncurrent versions of the object to a low-cost archive

- Transition to the lowest-cost storage:
  - Archive
  - Accelerated Archive



Archive

Transition your object versions to the lowest-cost Archive for ≤ 12-hour restore latency



Accelerated Archive

Transition your object versions to the low-cost Accelerated Archive for ≤2-hour restore latency

Object Tagging

Use Object Tags to define Key=Value Attributes for Objects

Description

Object Tagging allows customers to store key=value metadata attributes with their objects. This is useful for labeling object data for future operations or discovery

Availability

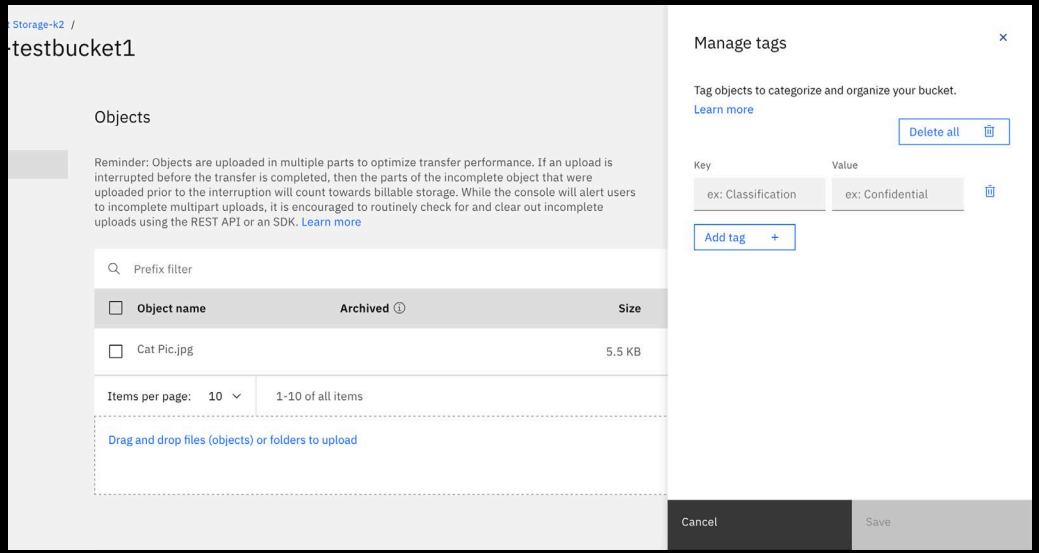
Available to all IBM Cloud customers on new and existing buckets

Enabling Object Tagging

Create Object Tags on object upload, through the PUT Object Tagging operations, or by editing directly in the IBM Cloud Console. Only Bucket Users with Owner, Full-Control, or Write Privileges can modify tags on an object

How Object Tagging works?

- Tags are stored as object metadata and consist of key=value attributes
- Add or remove tags through the PUT Object Tagging operation
- Any PUT Object Tagging API operation will overwrite the previous set of tags
- An object can support up to 10 tags



Static Website Hosting

A bucket can now be accessed as a website

Description

Static Web Hosting allows a bucket to serve as a website. Previously, COS was used to store the images and videos of a website. Now there is no need to run a separate application server

Availability

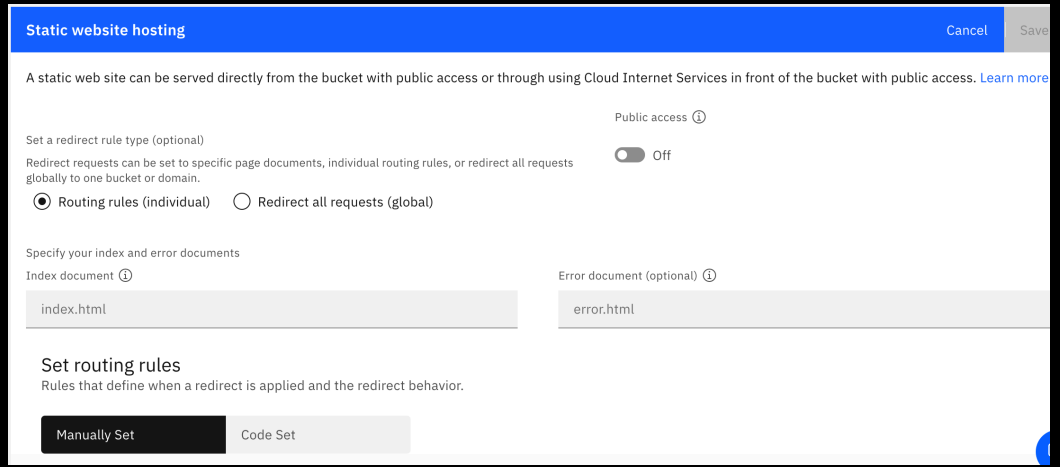
Available to all IBM Cloud customers on new and existing buckets

Enabling Static Web Hosting

Static Web Hosting can be enabled on new buckets through the Static Website Bucket Template or on existing buckets in the Bucket Configuration Panel

How Static Web Hosting works?

- To access the static website function, Cloud Object Storage provides a net website endpoint for each bucket location
- For example, s3.web.us-south.cloud-object-storage.appdomain.cloud is the endpoint for the US South region.
- The existing buckets and endpoints continue to work the same way
- When you configure your bucket as a website, you can specify the index document you want returned for requests made to the root of your website.



Aspera high-speed transfer

- No charge for data upload
- IBM SDKs for ease of use
- Ideal for large files and variable network connections
- Faster transfer speed than standard HTTP
- Security that starts at the point of transfer

Cloud Object Storage Data Management & Resiliency

Multi Zone Regions and Cross Regional worldwide locations

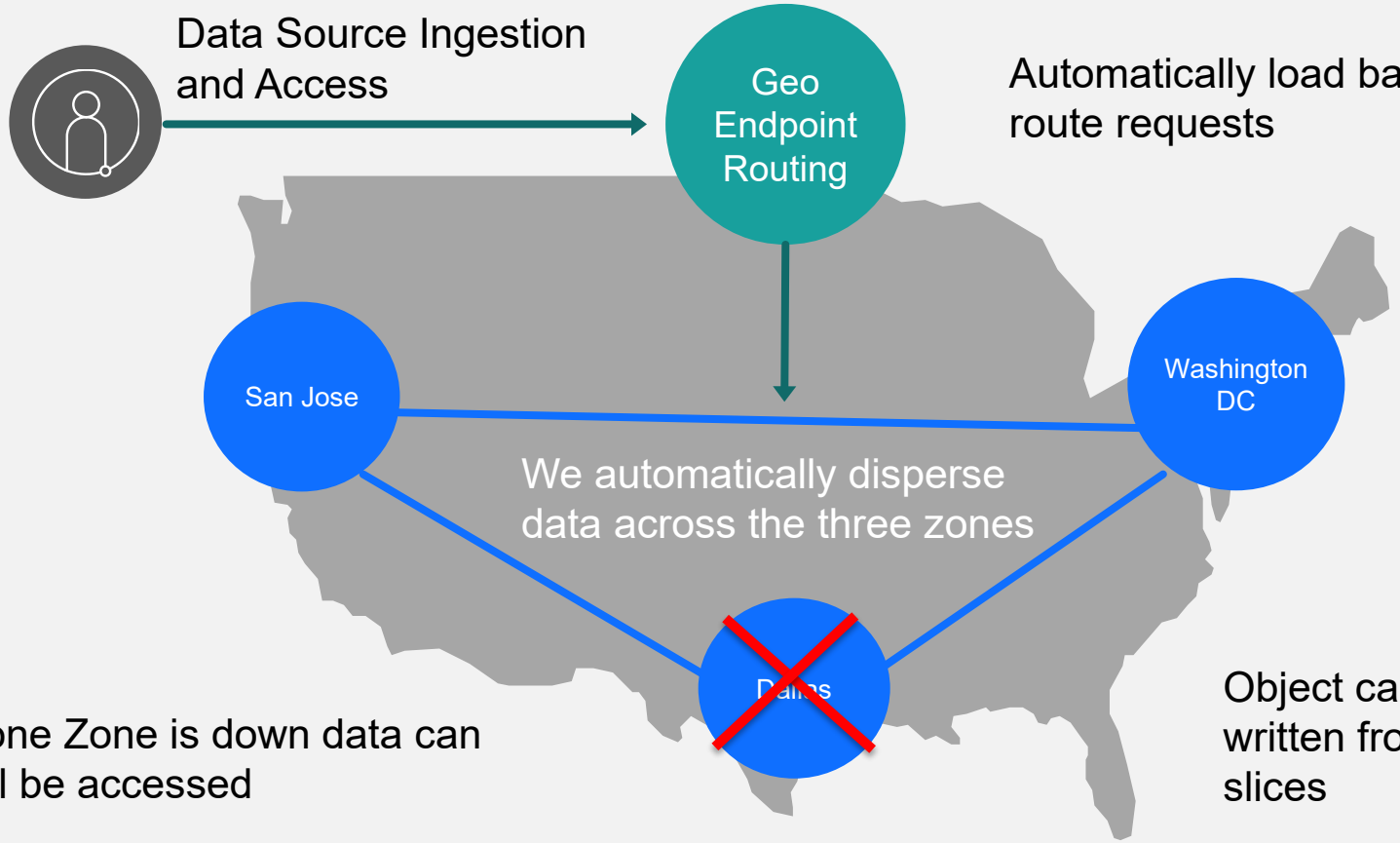
Storage flexibility with storage tiers and Archive

Designed to protect data and maintain availability

Redundant network paths and redundant system components

Security and control over your data with encryption options, policies and permissions

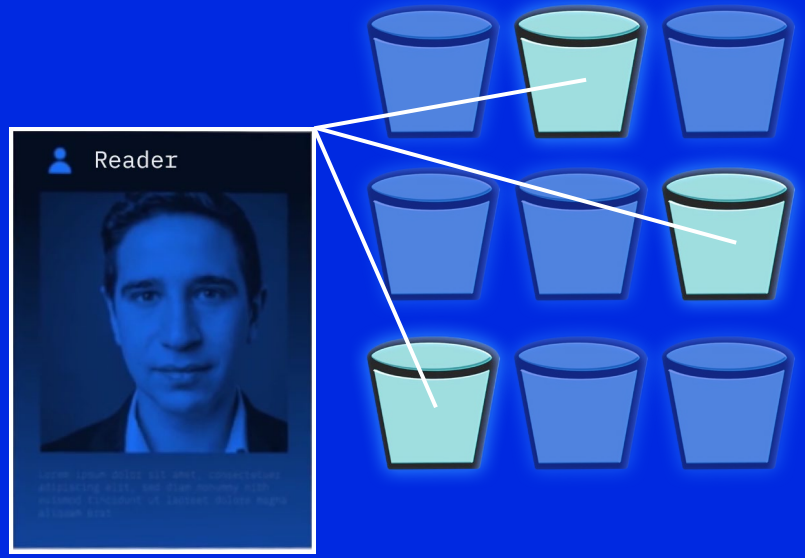
Cross Region Resiliency



Securely store and access your data

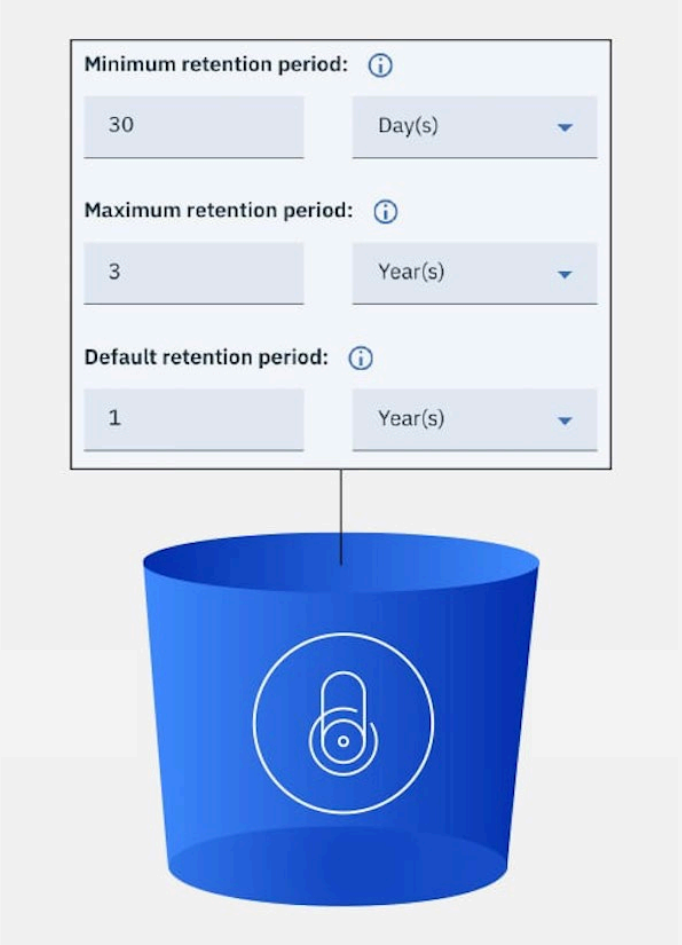
IBM Cloud Identity and Access Management (IAM) offers integrated support for policies and permissions

- Set bucket level permissions for users and applications
- Ability to use IBM Cloud user roles to set data access policies
- Ability to create and manage API keys for developers and application access
- Supports multiple unique credentials including AWS style HMAC credentials



Lock your data with immutable object storage

- Preserve electronic records and protect your data against deletion or modification
- Maintain data integrity in a WORM (Write-Once-Read-Many)
- Helps customers meet compliance and regulatory requirements for data preservation



Set retention policy on a bucket and specify retention period

Event Notifications

Cloud Object Storage Event Notifications supports customer defined Cloud Function actions that can be executed as a result of events triggered when the contents of a COS bucket changes.

Why Cloud Function : IBM Cloud Functions accelerates application development, which enables developers to quickly build and deploy apps with action sequences that execute in response to COS events.

Use Case : Serverless computing driven by COS events and triggers.

Examples:

- Create thumbnail for photo uploaded to album
- Virus scanning objects uploaded to COS

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Query data directly in Object Storage With IBM Cloud SQL Query

- Quickly submit and run SQL queries directly to Cloud Object Storage
- No setup required
- Query data where it resides
- Write results back to Cloud Object Storage
- Leverage Cloud Object Storage permissions and policies to securely access your data
- Use Cases: Operationalizing Data Pipelines, BI on Object Storage, Data Lakes, Database Consolidation