
AWS
re:Invent

STG204

Modernize your on-premises backup strategy with AWS

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AWS

AWS re:Invent

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Agenda

Business goals for backup

Challenges meeting those goals with your current backup

How AWS can help modernize your on-premises backup strategy

Key decisions to make and questions to ask

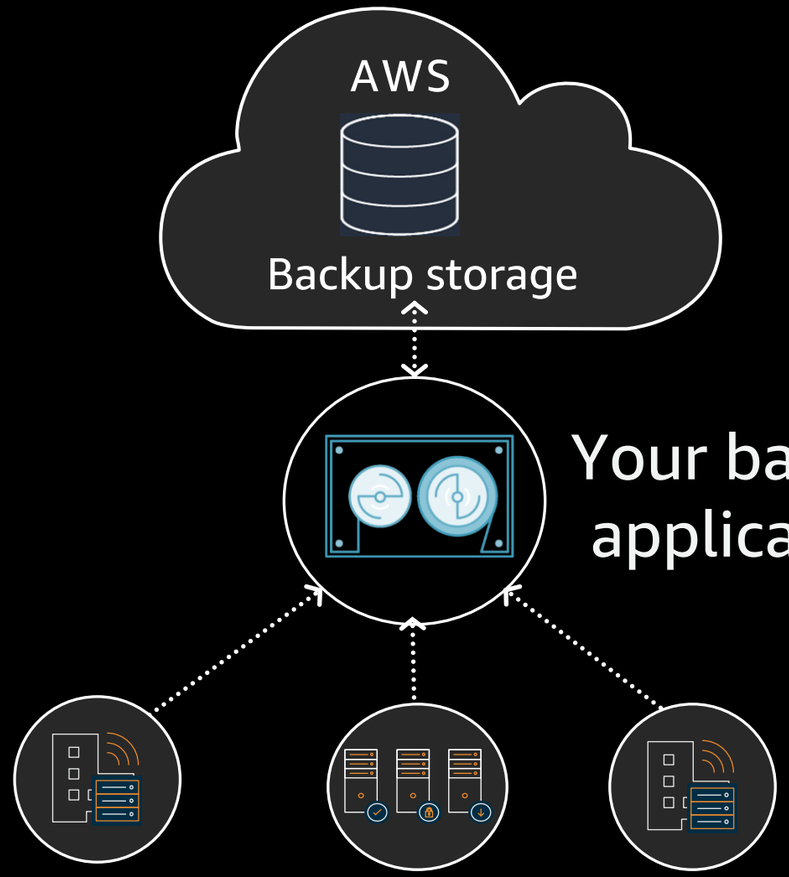
Expected outcomes and benefits of modernizing with AWS



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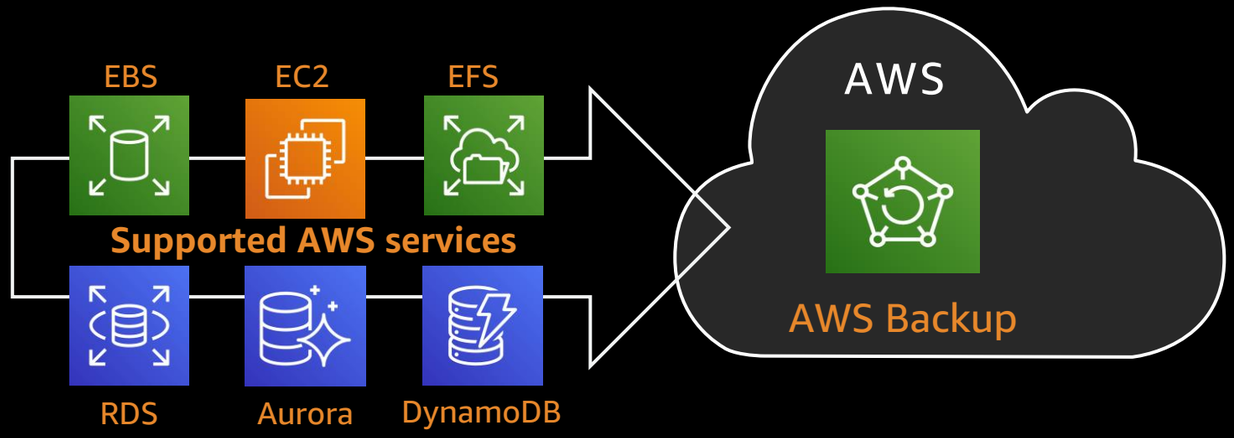
What are your backup modernization goals?

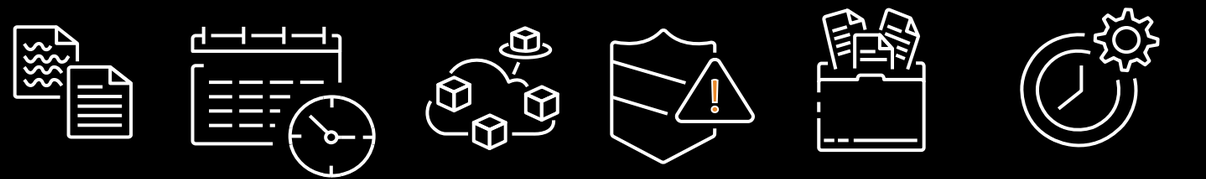
Modernizing backup to AWS



You have on-premises data and applications to protect

Modernizing backup in-cloud





Policy- and tag-based backup solution

Automated backup scheduling

Centralized backup activity monitoring and logs

Backup encryption

Backup access policies

Automated backup retention management

Centralized backup operations across AWS services

Backup to cloud with AWS



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Five customer on-premises backup challenges



Too much data

Managing constant backup appliance storage growth and data lifecycle management



Too vulnerable

Backups not secured from cyber attacks and unauthorized deletions



Too fragile

Ensuring your backups are durable, available, and recoverable across sites



Too expensive

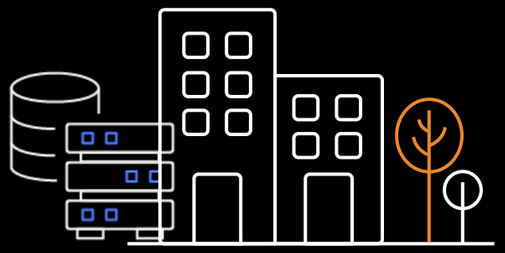
Keeping costs low for growing backup storage needs for one or many physical backup appliances



Too complicated

From procurement to setup, daily monitoring, management, and upgrades of the hardware, software, and networking

On-premises backup storage vs. AWS storage



With on-premises backup storage, you:

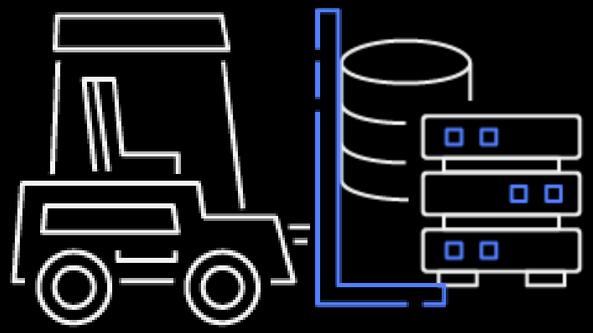
- Procure, set up, manage, monitor your storage
- Pre-pay for your backup storage with no ability to easily scale up or down
- Settle for < 11 9’s of data durability
- Manage daily maintenance tasks
- Buy two or more appliances for higher availability and redundancy with no SLAs



With AWS Storage you do NOT :

- Pay for fixed storage costs up-front
- Worry about running out of space
- Settle for < 11 9’s of data durability
- Manage daily or weekly maintenance tasks
- Settle for < 99.5% data availability or buy multiple backup appliances to increase availability

Backup, restore, and archive AWS options



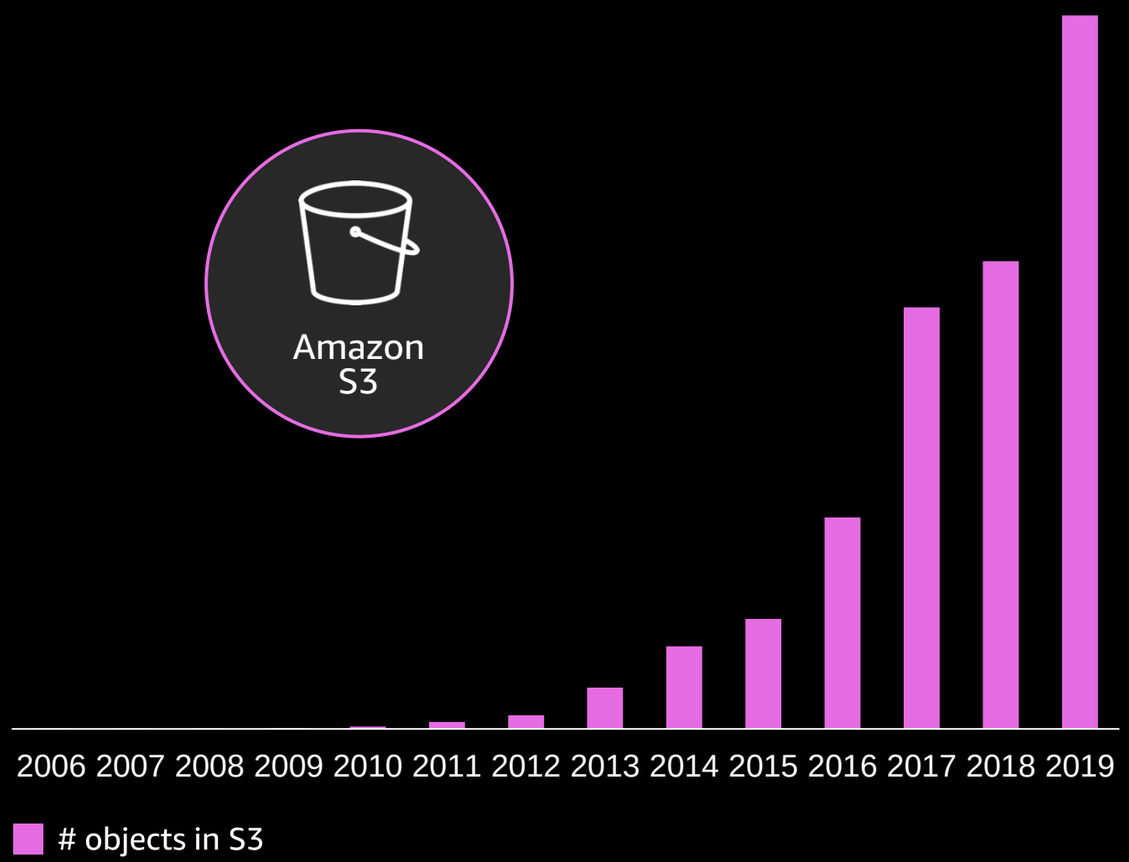
Backup, restore, and archive data

Backups

Backup and archive storage	Linux / NFS backup storage	Windows backup storage
Amazon S3 and S3 Glacier	Amazon EFS	Amazon FSx for Windows File Server
All backup and archive storage	Oracle SAP MySQL	MS SQL Exchange

Example backup data types

S3 offers industry-leading scalability, availability, security, and performance



Exabytes stored across many millions of drives

S3 stores trillions of objects around the world

AWS regularly peaks at millions of requests per second

In a single Region, AWS processes peaks of over 60 tb/s in a day

235+ distributed micro-services in 3 or more AZs per Region

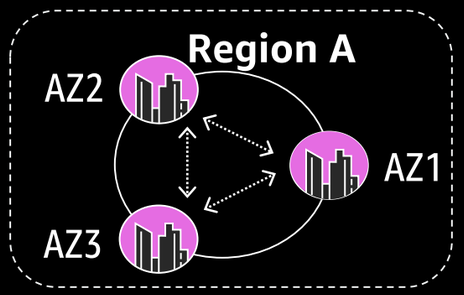
Amazon S3 features for modernized backups

BACKUP STORAGE MODERNIZED IN AWS

Reduced complexity

No physical storage to install, update, or maintain

No tapes to manage



Increased data availability without complexity

Increased compliance

Designed to provide 99.999999999% durability

S3 Object Lock of backup data

SLA-based replication

Backup encryption

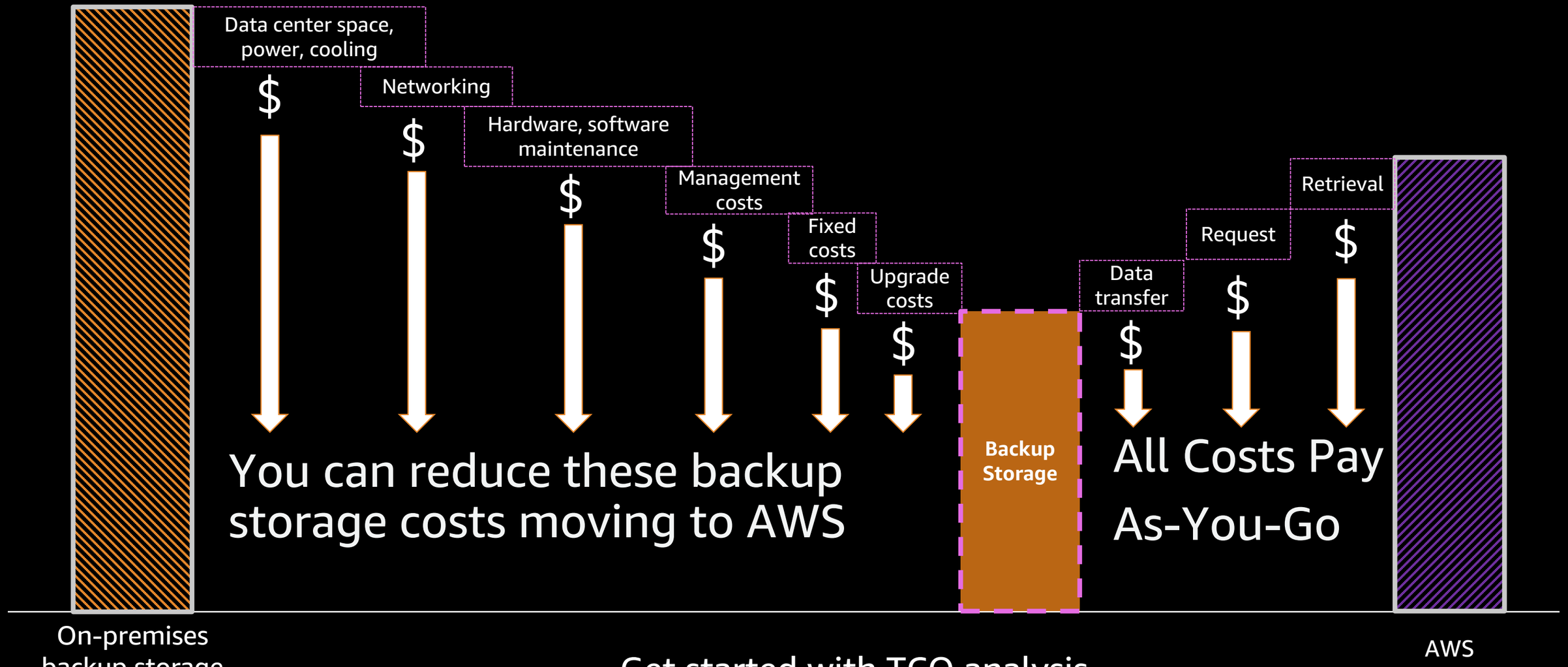
Extend retention legal holds

Pay-as-you-go flexible costs

Elastic expansion or contraction of backup storage and needs change

Amazon S3 Glacier Deep Archive option – $0.00099 per GB-month

Backup storage costs comparison

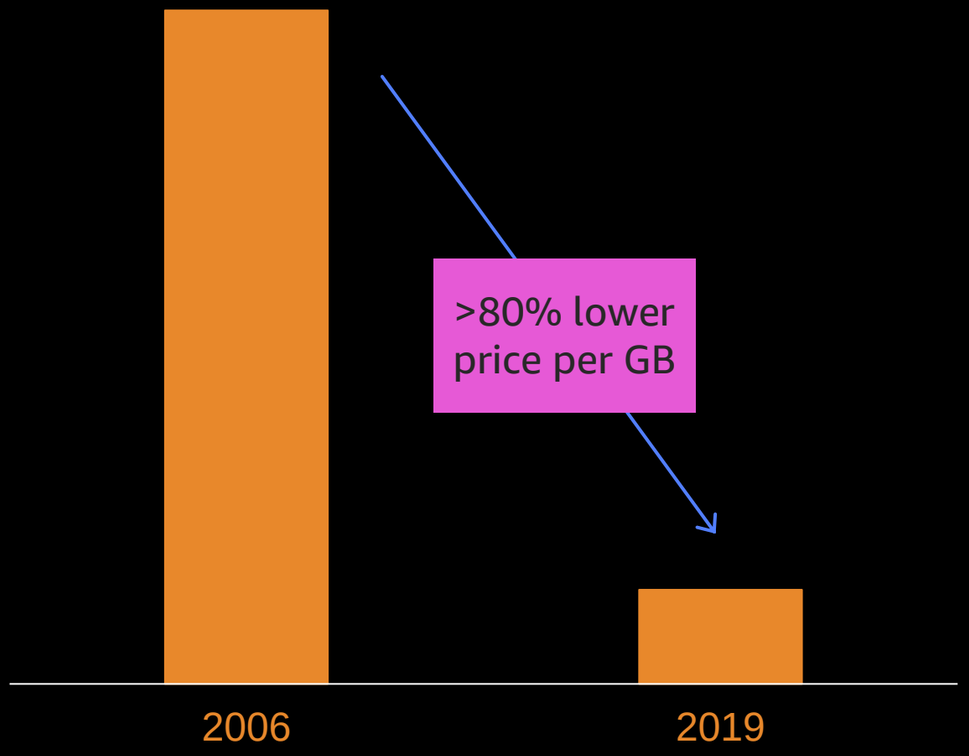


Get started with TCO analysis

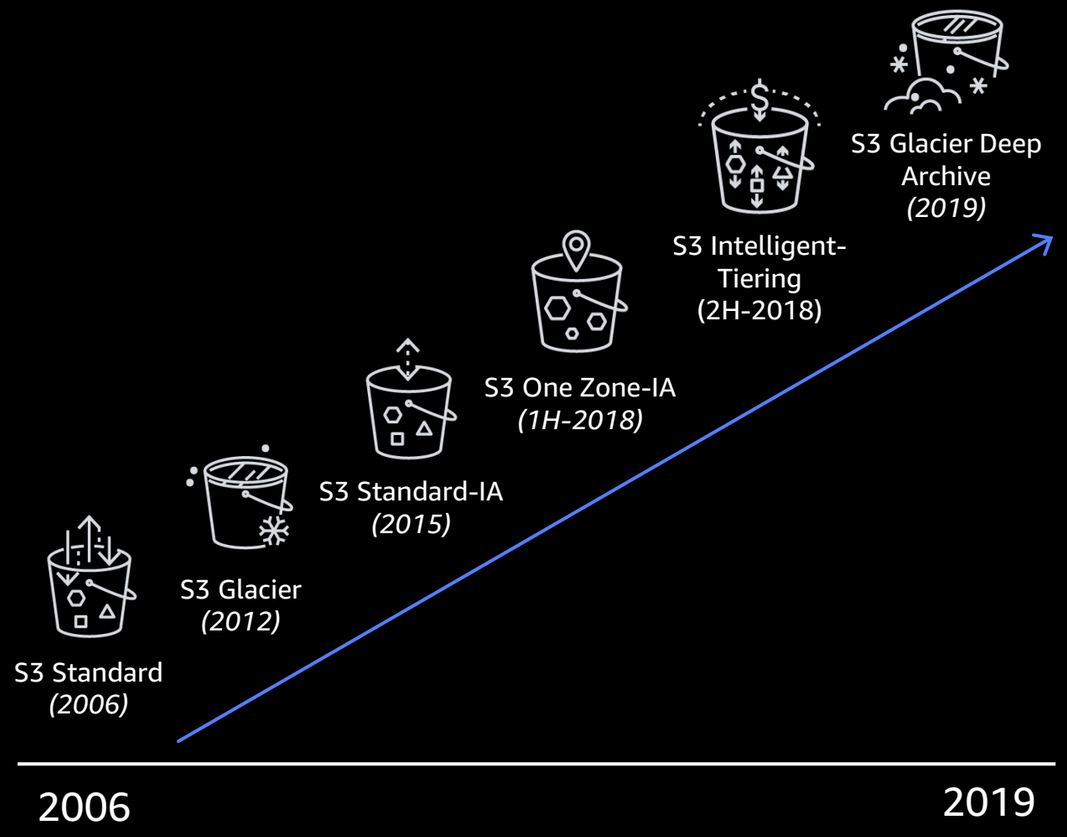
https://aws.amazon.com/tco-calculator/

Amazon S3 storage classes for your backups

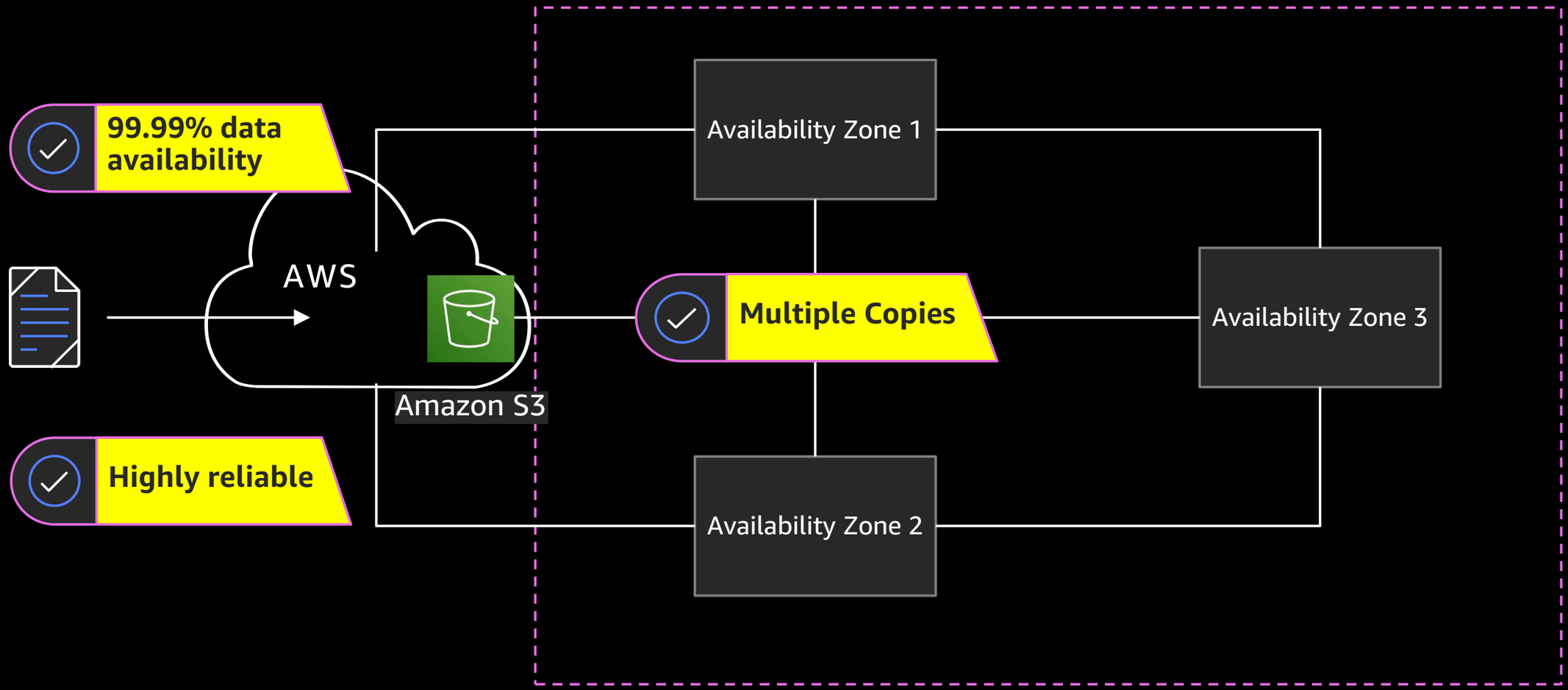
Decreasing storage prices



Accelerating innovation



Higher availability for your backup data



99.99% availability in S3 Standard and IA classes

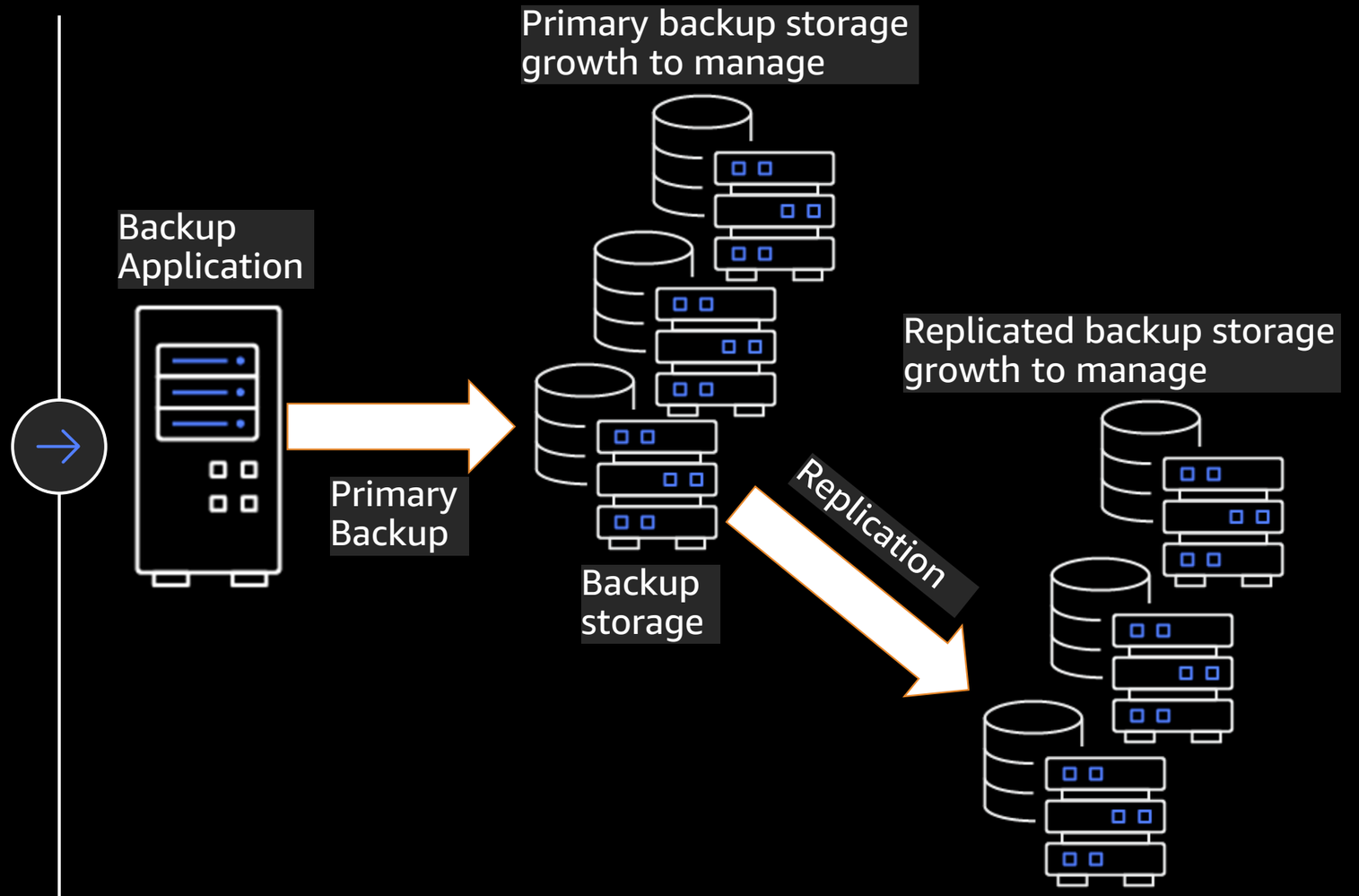
Designed for 99.999999999% durability

On-premises backup storage management

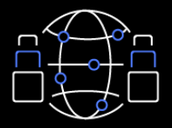
Monitor, manage, and plan your own backup storage growth at primary location

Replicate data to a remote backup appliance

Monitor, manage, and plan your own backup storage growth at remote site (2X or 3X)

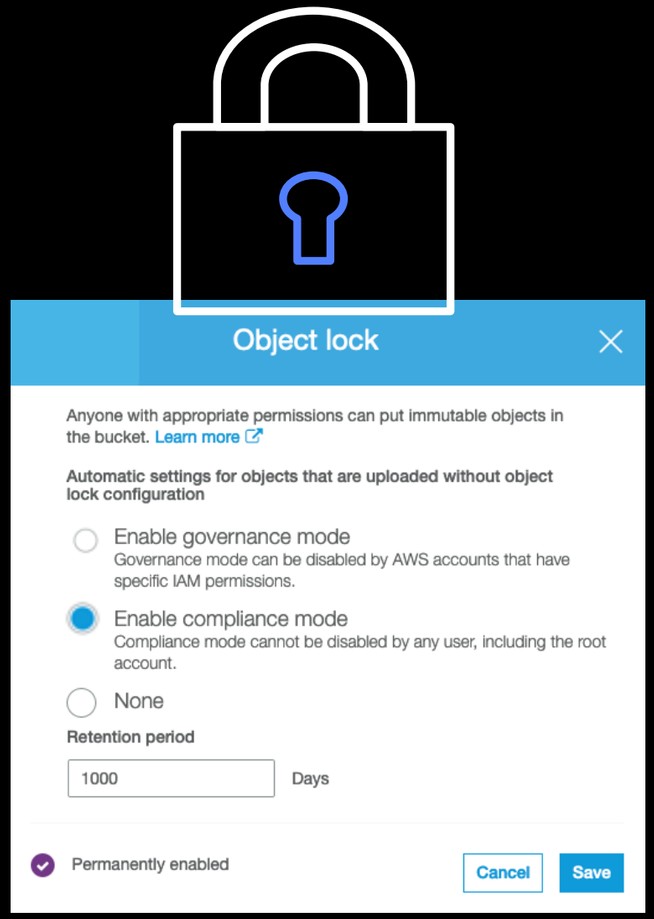


S3 Data Protection capabilities for backup data

GOAL	AMAZON S3 FEATURES
 Replicate data for compliance and bad actor protection	Use S3 Replication with Replication Time Control and ownership override
 Protect data from accidental deletes	Use bucket versioning while reducing cost with Lifecycle policies
 Protect data for governance and compliance purposes	Use S3 Object Lock to store objects as write-once-read-many (WORM)

Amazon S3 Object Lock for your backup data

Use **Object Lock** to safely store backups against ransomware



Governance mode

Lock backup data from most un-authorized deletions; privileged users can modify retention

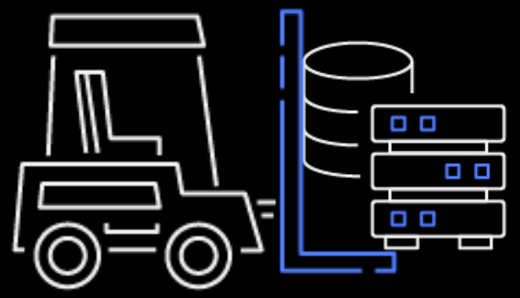
Compliance mode

Store data in compliant WORM format; cannot modify retention controls, even AWS root account

Legal hold

If you're unsure how long you want your objects to stay immutable. Separate setting.

Modernizing with AWS Storage Gateway



Backup, restore, and archive data



Example backup data types

Backup and archive storage	Linux / NFS backup storage	Windows backup storage
Amazon S3 and S3 Glacier	Amazon EFS	Amazon FSx for Windows File Server
All backup and archive storage	Oracle RMAN SAP Backint MySQL Dump	MSSQL VDI MSSQL VSS Exchange VSS

AWS Storage Gateway Family



File Gateway

Store and access objects in Amazon S3 from backup applications over NFS or SMB with local caching for performance

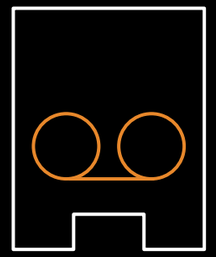
File-based applications work without change



Volume Gateway

Block storage on-premises backed by cloud storage with local caching. Can be used as a backup to disk target and is integrated with AWS Backup

SAN-like with cloud recovery



Tape Gateway

Drop-in replacement for physical tape infrastructure backed by cloud storage with local caching

Easily switch tape backups to AWS

Tape Gateway supported backup software

AWS Partner Network Storage partners make it easy to use AWS Storage for your backups..







Micro Focus







Quest

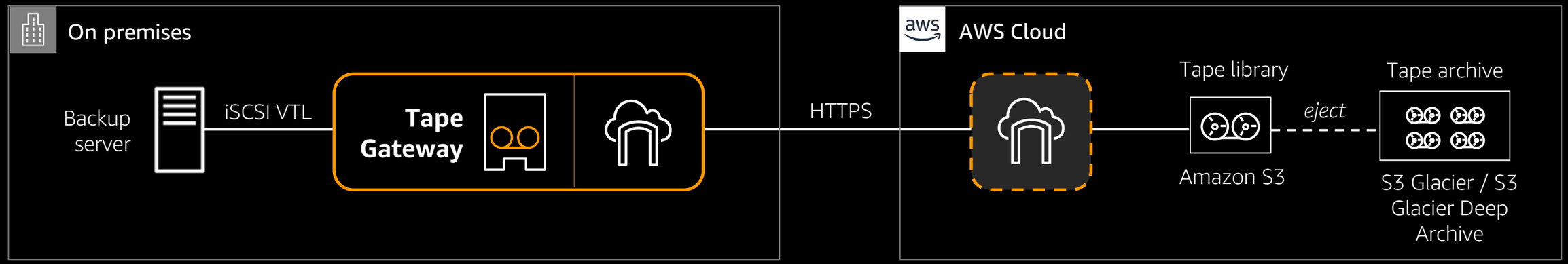
Microsoft System Center
Data Protection Manager

NovaStor



AWS Storage Gateway

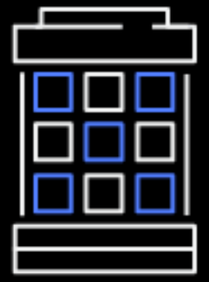
AWS STORAGE GATEWAY CREATES VIRTUAL TAPES TO ON-PREMISES BACKUP APPLICATIONS



Use cases

- On-premises backup to cloud
- Drop-in replacement for physical tape libraries
- Archive to Amazon S3 Glacier or Amazon S3 Glacier Deep Archive

Compare to on-premises tape libraries



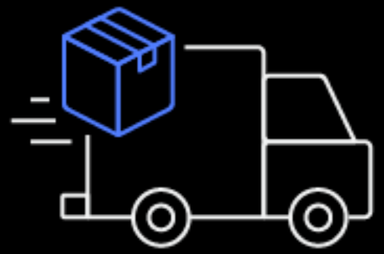
Hosting (space, power, cooling, network)



Capital (servers, libraries, tapes)



Tape generation migrations



Offsite storage and transportation



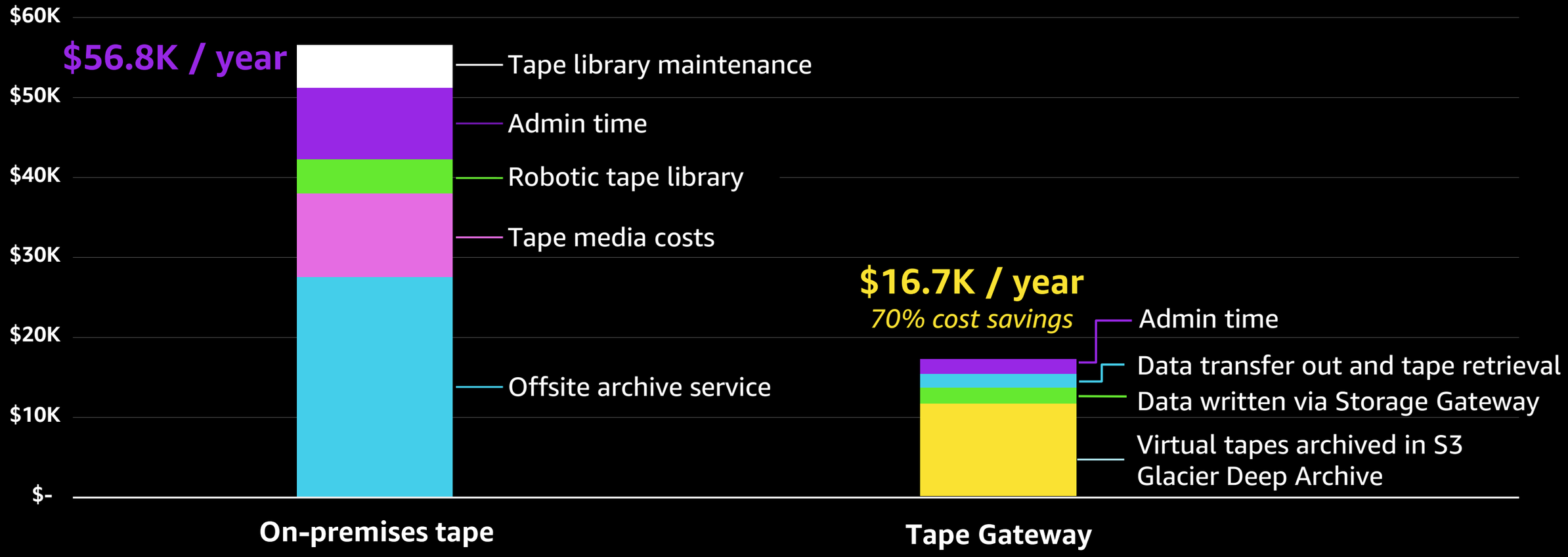
Administration and operations



Opportunity cost

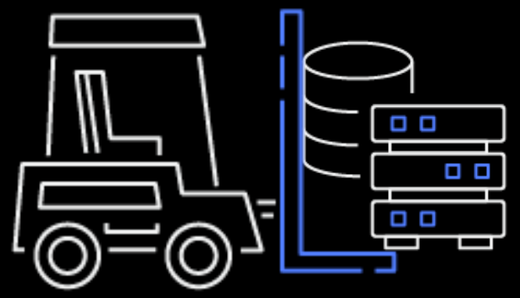
Tape Gateway costs less than physical tapes

Customer example: Every month, 100 TB written and 1 tape retrieval; 1-year retention

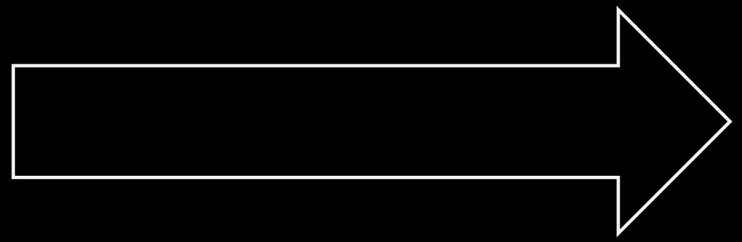


*based on US N. Virginia region

Modernizing with AWS Storage Gateway



Backup, restore, and archive data

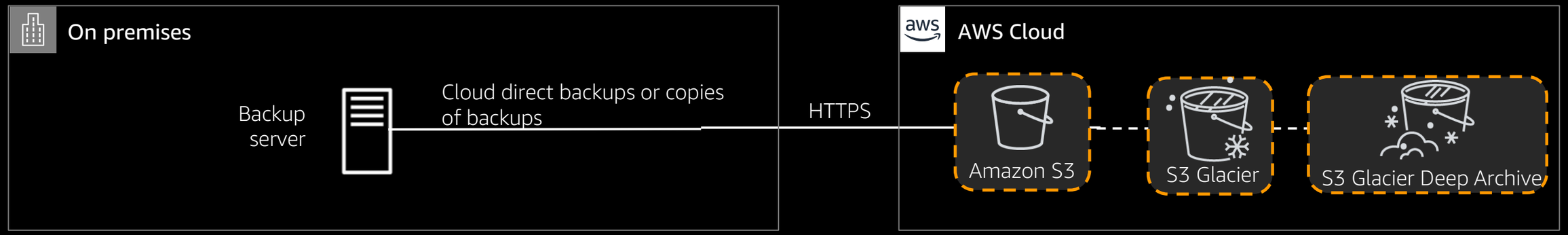


Example backup data types

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All backup and archive storage	Oracle RMAN SAP Backint MySQL Dump	MSSQL VDI MSSQL VSS Exchange VSS

Backup directly to Amazon S3

BACKUP APPLICATIONS CAN SEND BACKUPS DIRECTLY TO AMAZON S3 WITH DEDUPLICATION



Use cases

- No gateway device required
- Backup application sends backups directly to Amazon S3 / Amazon S3 Glacier
- Backup policies can natively select a specific Amazon S3 storage class
- Deduplication, compression, and encryption of data sent directly to Amazon S3 can be done by backup application

AWS Backup Storage Competency Partners



Find AWS Backup Storage Competency Partners

Backup, restore, and archive AWS options



Backup, restore, and archive data



Example backup data types

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Amazon Elastic File System (Amazon EFS)



Example backup data types

Oracle RMAN
SAP Backint
MySQL Dump

Amazon EFS is a fully managed, **NFS-compatible** backup destination for backup applications or databases backup storage

Cloud native

Highly reliable

Cost optimized

Amazon FSx For Windows File Server



Example backup data types

MS SQL
Exchange
Windows File Systems

Built on Windows Server, Amazon FSx for Windows File Server provides fully managed SMB-compatible storage **with data deduplication** for backup data

Cloud native

Highly reliable

Cost optimized

How to modernize: Key decisions to make



Backup-to-cloud goals

I want to modernize my backup strategy but want to use my existing backup application

I am required to have an offsite backup – where is the right place to store those copies?

I need local access to some backup data for fast recovery

I need modern, reliable, durable, available, and lower-cost storage for my backup data

I want to have copies of my backups safe from unauthorized deletions

Questions to ask



Does my backup software write directly to cloud storage or do I need a gateway device?

Where do I need my copies? How many do I need? Any local copies required?

What is my RPO and RTO? Do I need to keep a local copy for faster recovery?

Do I want to continue to install, patch, update, and manage my own backup storage?

How do I ensure my backups are immutable and safe from unauthorized deletions?

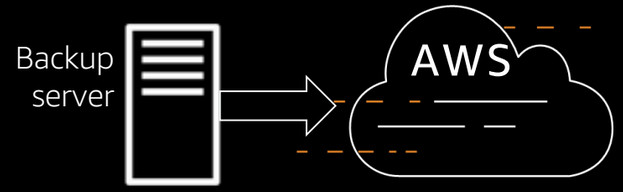
Modernizing your backup is a multi-step journey



1 Drop-in compatibility

Drop-in compatibility with your existing backup application to eliminate physical tapes

AWS
Storage Gateway



2 Direct-to-cloud backup architecture

Backup directly to AWS storage without a gateway device with most modern backup applications

Amazon S3
and
S3 Glacier

Amazon
EFS

Amazon
FSx for
Windows



3 Cloud-native AWS Backup

Centrally manage and automate backups across AWS services



Related Amazon S3 re:Invent sessions

re:Invent Session Name	Session #
What's new with Amazon S3	STG201
Now is the time: Move your workloads to AWS storage	STG202
Data protection and compliance for cloud workloads with AWS Backup	STG209
Get on-premises access to cloud storage in minutes with AWS Storage Gateway	STG220
Architecting for high availability on Amazon S3	STG301
Amazon S3 foundations: Best practices for Amazon S3	STG205

Thank you!

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