

AWS Certified Solutions Architect — Associate (SAA-C01)



Module 6

Storage — EFS & Other Storage

Agenda

 Amazon S3 Labs Continued

 Amazon EFS & FSx

 AWS Storage Gateway

 AWS DataSync & SFTP

 AWS Backup

 Labs

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS

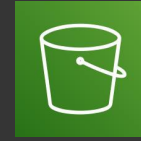


Amazon FSx for
Windows File Server

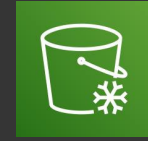


Amazon FSx
for Lustre

Object storage



Amazon S3



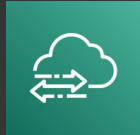
Amazon S3
Glacier

Hybrid

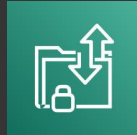


AWS Storage
Gateway family

Transport and edge



AWS
DataSync

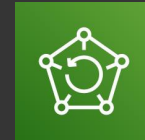


AWS Transfer
for SFTP



AWS Snow*
family

Backup



AWS
Backup

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS



Amazon FSx for
Windows File Server



Amazon FSx
for Lustre

Object storage



Amazon S3



Amazon S3
Glacier

Hybrid



AWS Storage
Gateway family

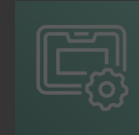
Transport and edge



AWS
DataSync

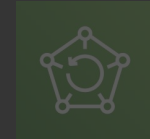


AWS Transfer
for SFTP



AWS Snow*
family

Backup



AWS
Backup

File data = unstructured data



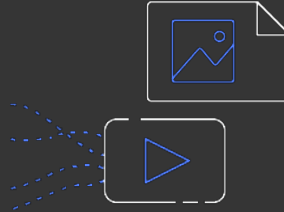
Home Directories

Word processing
Spreadsheets
Presentations



Media Files

Digital photos
Audio files
Video files



Digital Security

Surveillance photos
Surveillance videos



Machine Generated

Satellite images
Weather data
Seismic imagery
Atmospheric data



Development Data

Code with CI/CD
Log files



Sensor Data

Oceanographic
Weather
Traffic

Fully managed cloud filesystems

AWS provides file system options that help you easily address the diverse needs of your file-based applications and workloads

FILE SYSTEMS FOR BUSINESS WORKLOADS

Amazon EFS



Fully managed cloud-native file system
for Linux-based applications

LINUX-BASED WORKLOADS

NEW!

Amazon FSx for
Windows File Server



Fully managed Windows file servers
for business applications

WINDOWS-BASED WORKLOADS

FILE SYSTEM FOR COMPUTE INTENSIVE WORKLOADS

NEW!

Amazon FSx
for Lustre



Fully managed Lustre file system for
high performance workloads

COMPUTE-INTENSIVE WORKLOADS



Amazon EFS

FILE SYSTEMS FOR BUSINESS WORKLOADS

Amazon EFS



Fully managed cloud-native file system
for Linux-based applications

LINUX-BASED WORKLOADS

NEW!

Amazon FSx for Windows File Server



Fully managed Windows file servers
for business applications

WINDOWS-BASED WORKLOADS

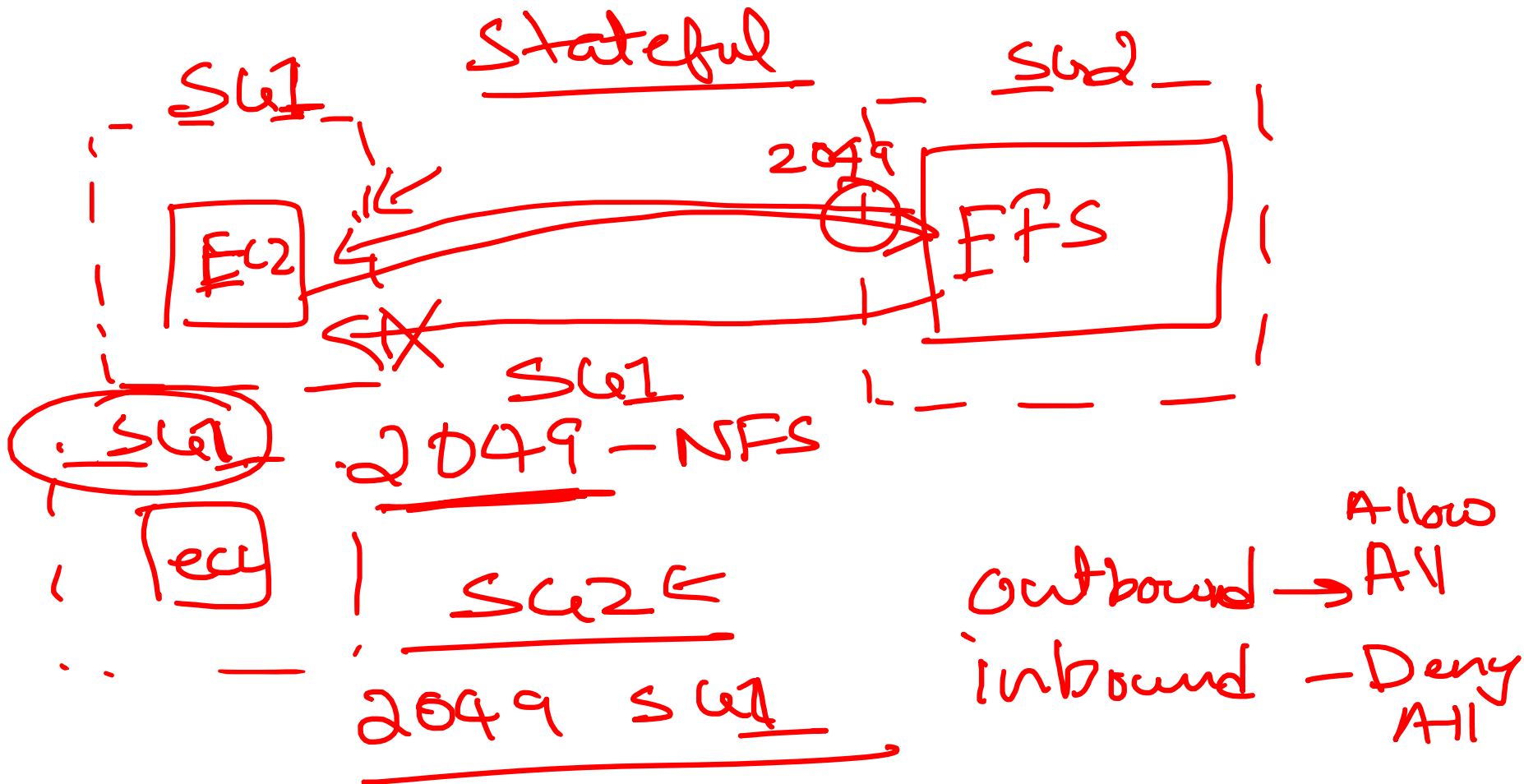
NEW!

Amazon FSx for Lustre



Fully managed Lustre file system for
high performance workloads

COMPUTE-INTENSIVE WORKLOADS



Elastic File System (EFS)

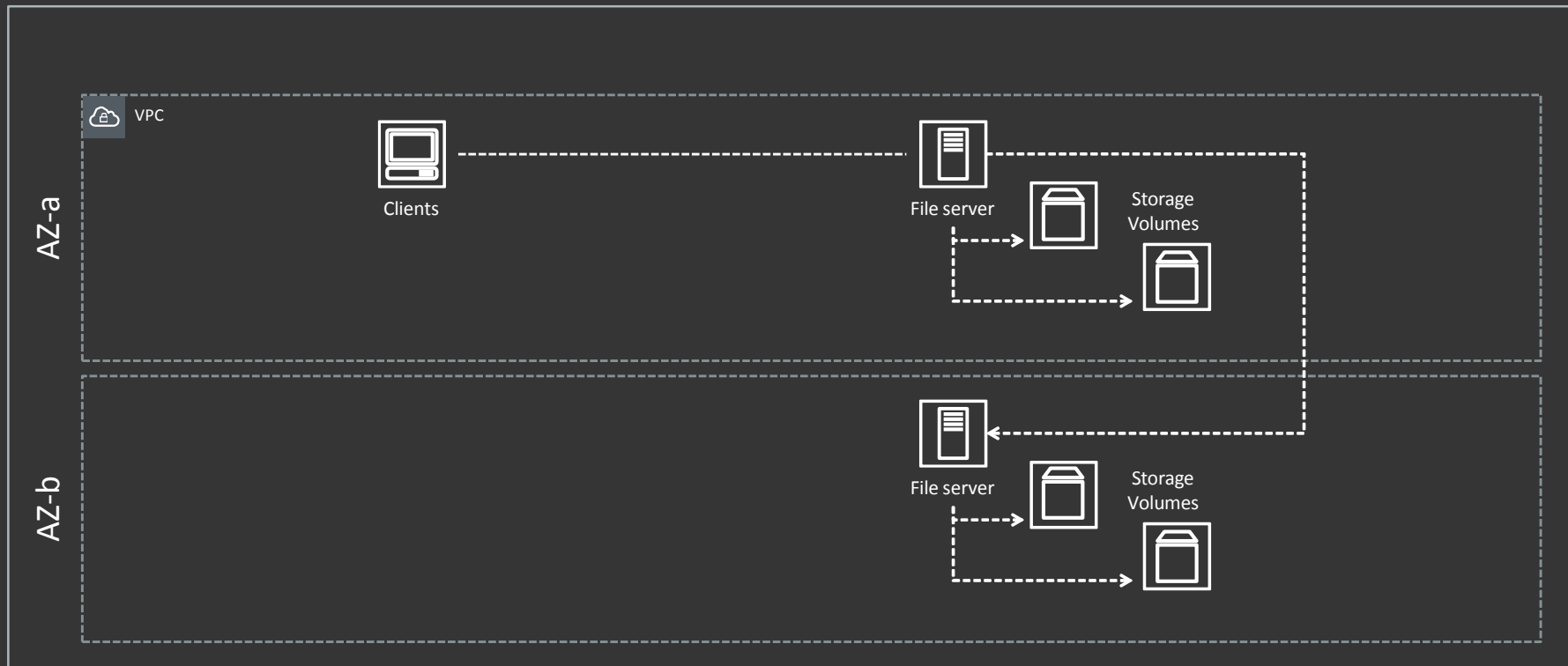
Network Attached Storage (NAS) in the Cloud

- Fully Managed File System for EC2 Instances.
- Shareable across thousands of instances.
- Elastically grows to petabyte scale.
- Highly Available & Durable.
- Infrequent Access tier available
- NFS v4-based



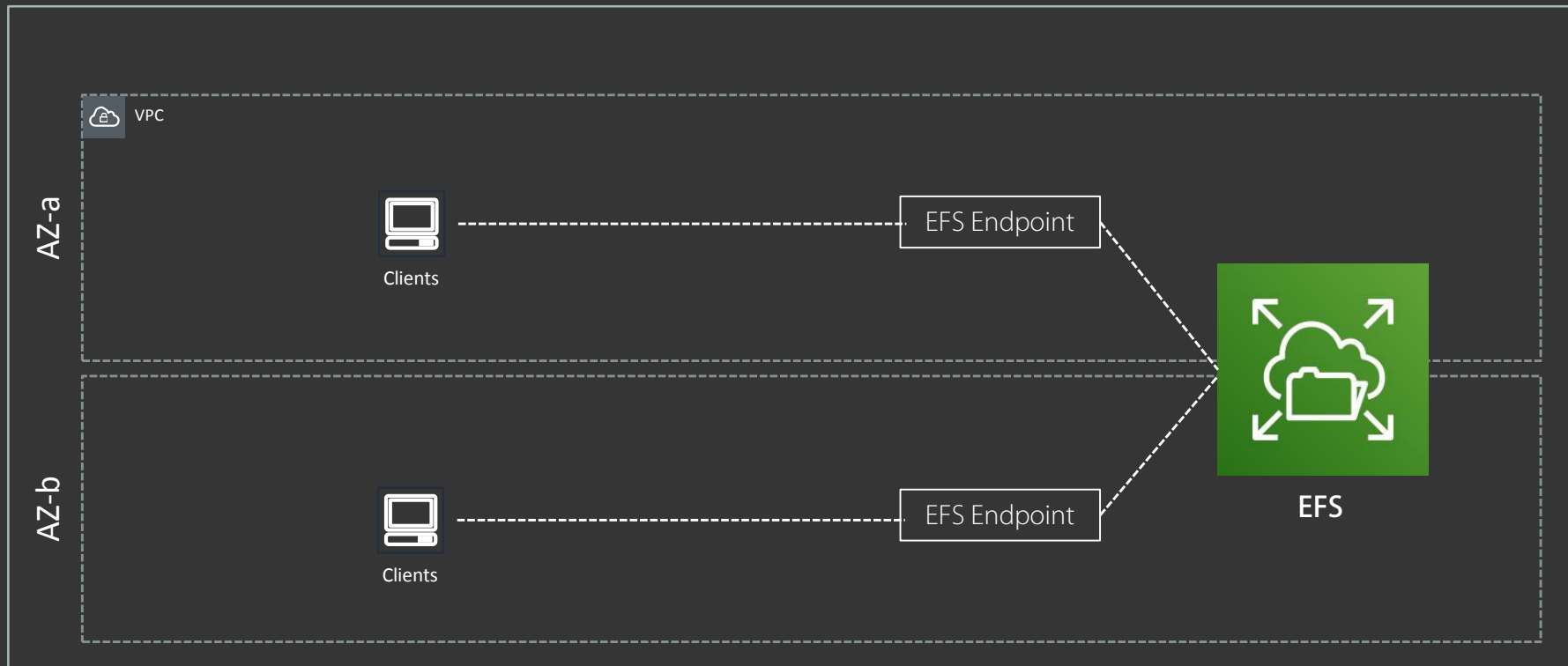


Before Amazon EFS... DIY shared file storage





Amazon EFS



EFS Labs

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS



Amazon FSx for
Windows File Server



Amazon FSx
for Lustre

Object storage



Amazon S3



Amazon S3
Glacier

Hybrid



AWS Storage
Gateway family

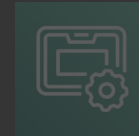
Transport and edge



AWS
DataSync



AWS Transfer
for SFTP



AWS Snow*
family

Backup



AWS
Backup



AWS Storage Gateway



Simple

Seamless,
nondisruptive
integration

Suitable for a vast
range of use cases



Economical

Accelerates data
center
shutdowns

Eliminates new
NAS/SAN
purchases



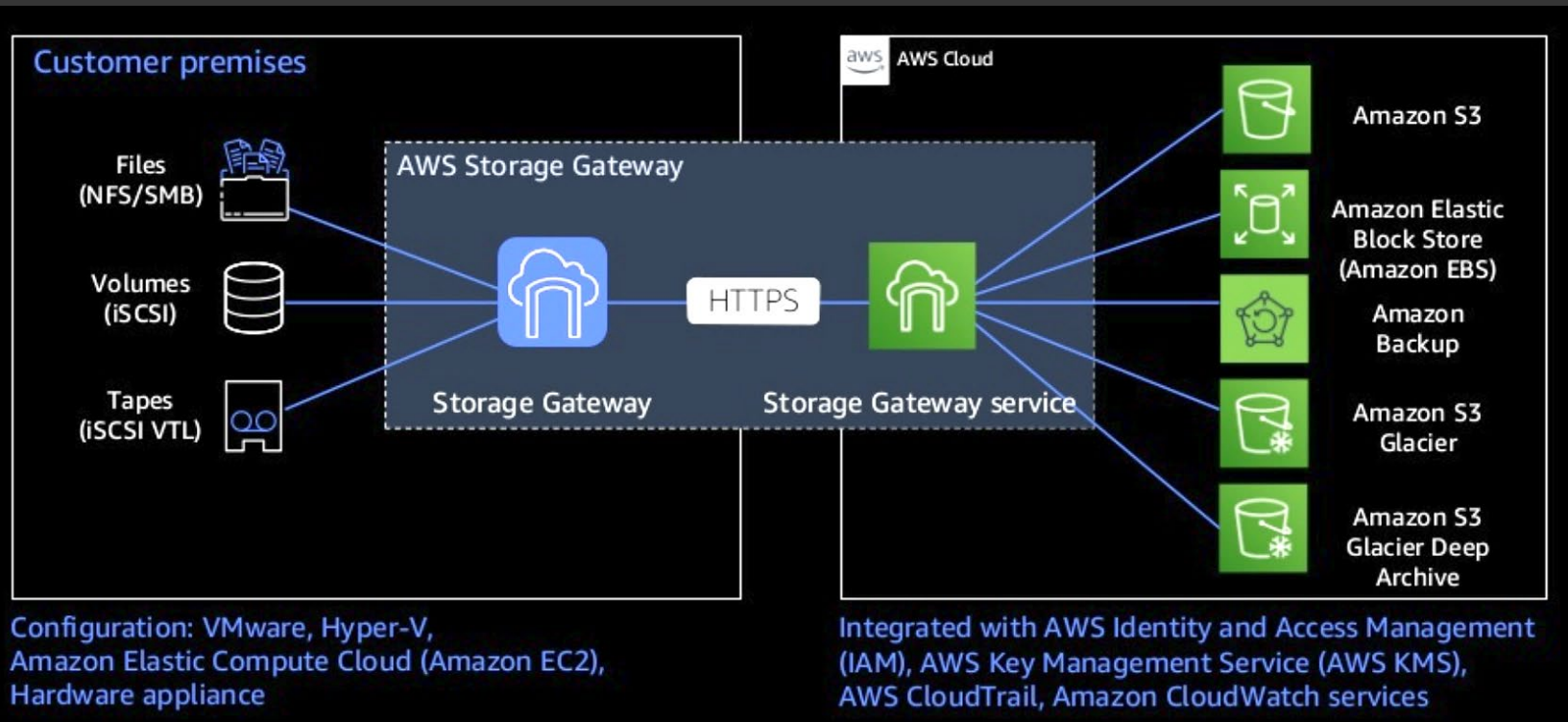
Hybrid

Incorporates
cloud scale and
durability with
on-premises
operations



AWS Storage Gateway

Provides on-premises access to virtually unlimited cloud storage





AWS Storage Gateway Family



File Gateway

Store and access objects
in Amazon S3 from
file-based applications
with local caching

Windows & Linux apps.
using Amazon S3



Volume Gateway

Block storage on-premises
backed by cloud storage with
local caching, Amazon Elastic
Block Store (Amazon EBS)
snapshots, and clones,
integrated with AWS Backup

SAN-like
w/ cloud recovery



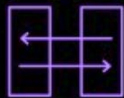
Tape Gateway

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

Easily switch tape
backups to AWS



AWS Storage Gateway Benefits



Multiple protocols

No changes to
existing apps



Local caching

Low-latency access to
frequently used data



Optimized data transfer

Minimize
network traffic



Secure & compliant

HIPAA, PCI, SOC* & ISO**
Encryption in transit and in cloud



Cost-effective

Pay as you
go pricing



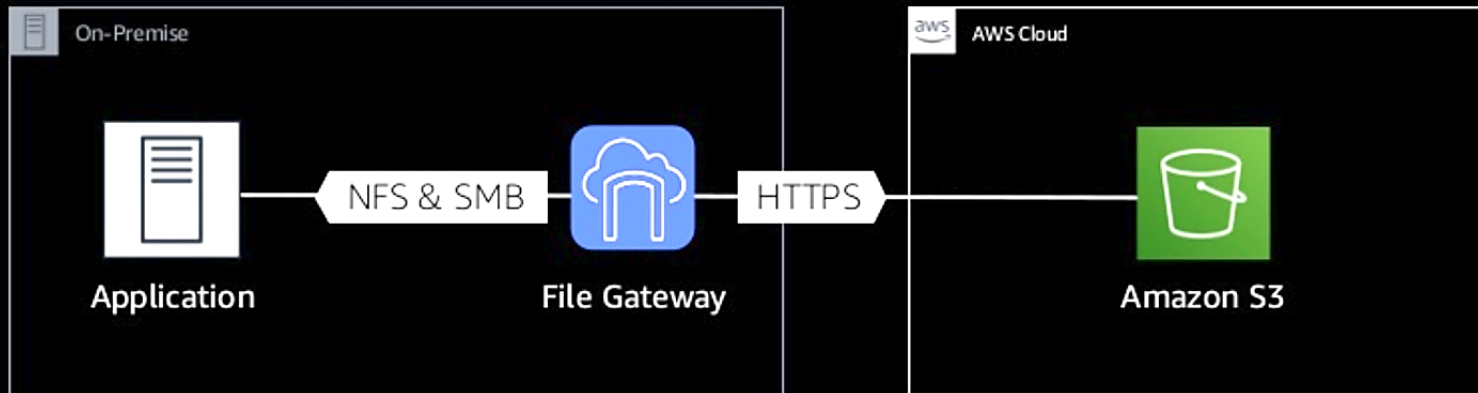
AWS integrated

Management, monitoring,
and in-cloud workloads

*SOC (1, 2, 3) **ISO (9001, 27001, 27017, 27018)

File Gateway overview and use cases

Store and access objects in Amazon S3 from file-based applications with local caching



Use cases

- Backup on-premises data to the cloud
- Shift on-premises storage to cloud-backed file shares
- Low latency access to data in AWS for on-premises applications

File Gateway capabilities



Connect using NFS v3/v4 or SMB v2/v3 protocols

Files stored as native S3 objects

Metadata is preserved as object user metadata

SMB ACLs – Windows Access Control Entries for up to 10 AD users and groups

NEW

Fully managed local cache

Read-through, write-back, LRU managed

Optimized data transfers

Uploads only send changes, downloads retrieve file parts needed

Up to 4 Gbps writes

Notifications through Amazon CloudWatch (e.g., upload complete)

Object-level encryption with SSE-S3 or SSE-KMS

Refresh cache by prefix

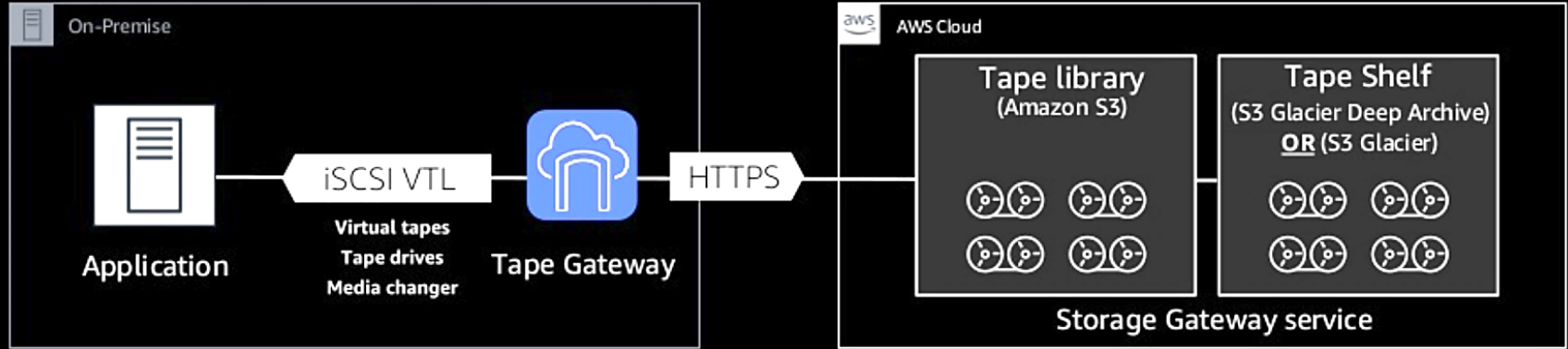
Optimizes content distribution workloads

S3 object lock support

WORM storage for on-premises file-based applications

Tape gateway overview and use cases

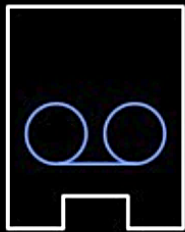
Present cloud-backed virtual tapes to on-premises backup applications



Use cases

- Tape-based backups and archives to cloud

Tape Gateway capabilities



Emulates physical tape library through iSCSI-VTL protocol

Fully managed local cache for recent backups

Read-through, write-back, LRU managed

Virtual tapes stored in Amazon S3

Ejected virtual tapes archived as read-only in S3 Glacier or S3 Glacier Deep Archive



Move tapes in Amazon S3 Glacier to Amazon S3 Glacier Deep Archive

Easy retrieval of archived tapes to virtual tape library

Retrieve in 3-5 hours from S3 Glacier and within 12 hours from Deep Archive

Configurable encryption SSE-S3 or SSE-KMS

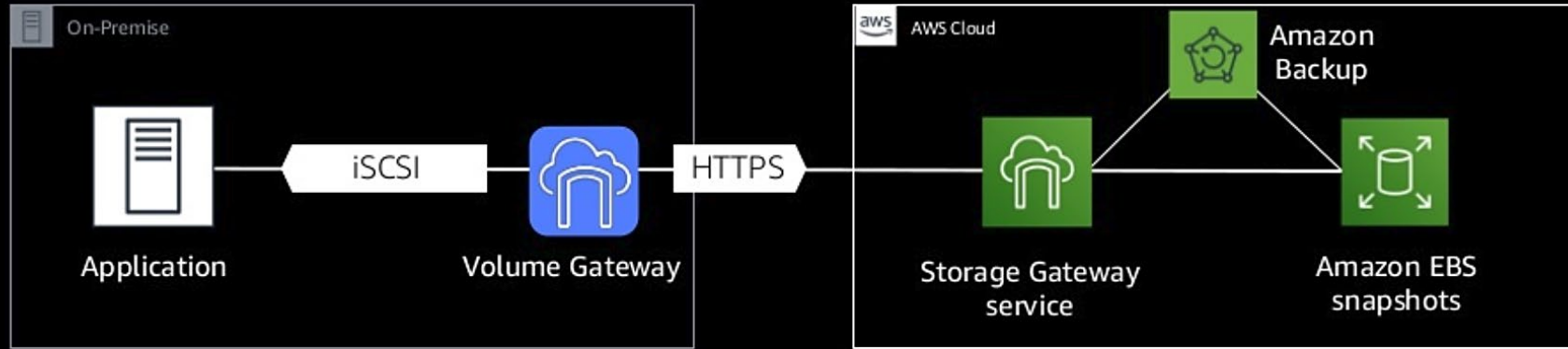
Compatible with all leading backup software

Performance

Client writes up to 2.3 Gbps, downloads up to 0.6 Gbps

Volume Gateway overview and use cases

Present block storage on-premises backed by cloud storage



Use cases

- Provide cloud-backed block storage to on-premises applications
- Backup on-premises data to the cloud

Volume Gateway capabilities



Presents block storage over iSCSI

Volumes stored in AWS reducing on-premises SAN footprint
Thin-provisioned (cached) or local (stored) volume types

Fully managed local cache

Read-through, write-back, LRU managed


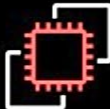

Configurable encryption with SSE-S3 or SSE-KMS

Volume snapshots stored in Amazon EBS

Manage backups of volumes through AWS Backup

Move volumes between gateways using attach-detach feature

Storage Gateway is available on a variety of form factors

| | Virtual machines | Amazon EC2 | Hardware appliance |
|-------|---|--|---|
| Where |  |  |  |
| | Corporate data centers | In AWS | Remote locations, branch offices |
| When | Leverage existing VM infrastructure | In-cloud data retrieval/access/DR | Out of the box simplified experience |

What to choose?

Block storage



- Relational or NoSQL databases
- Data warehousing
- Enterprise applications
- Big Data processing
- Backup / Recovery



Amazon
EBS

File storage



- Lift-and-shift existing applications
- Native support for industry standard access protocols
- High performance data processing
- Support of hybrid environments



Amazon
EFS



FSx for
Windows

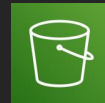


FSx for
Lustre

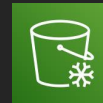
Object storage



- Cloud-native application data
- Data lakes
- Big data analytics
- Backup / Recovery
- Active Archive
- Hybrid storage



Amazon
S3



Amazon S3
Glacier

Hybrid / Transfer



- Simplified and accelerated migration to/from AWS storage services
- Support of industry standard protocols
- Offline data movement



AWS Storage Gateway
Family

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS



Amazon FSx for
Windows File Server



Amazon FSx
for Lustre

Object storage



Amazon S3



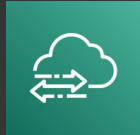
Amazon S3
Glacier

Hybrid



AWS Storage
Gateway family

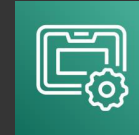
Transport and edge



AWS
DataSync

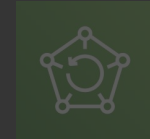


AWS Transfer
for SFTP



AWS Snow*
family

Backup

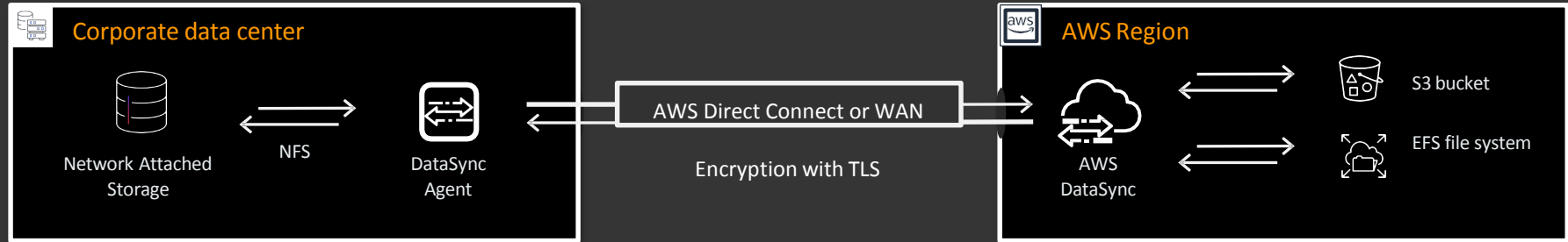


AWS
Backup



AWS DataSync

Simplifies and accelerates online data transfer — up to 10X faster than open source tools



Migrate active application data to AWS



Transfer data for timely in-cloud analysis

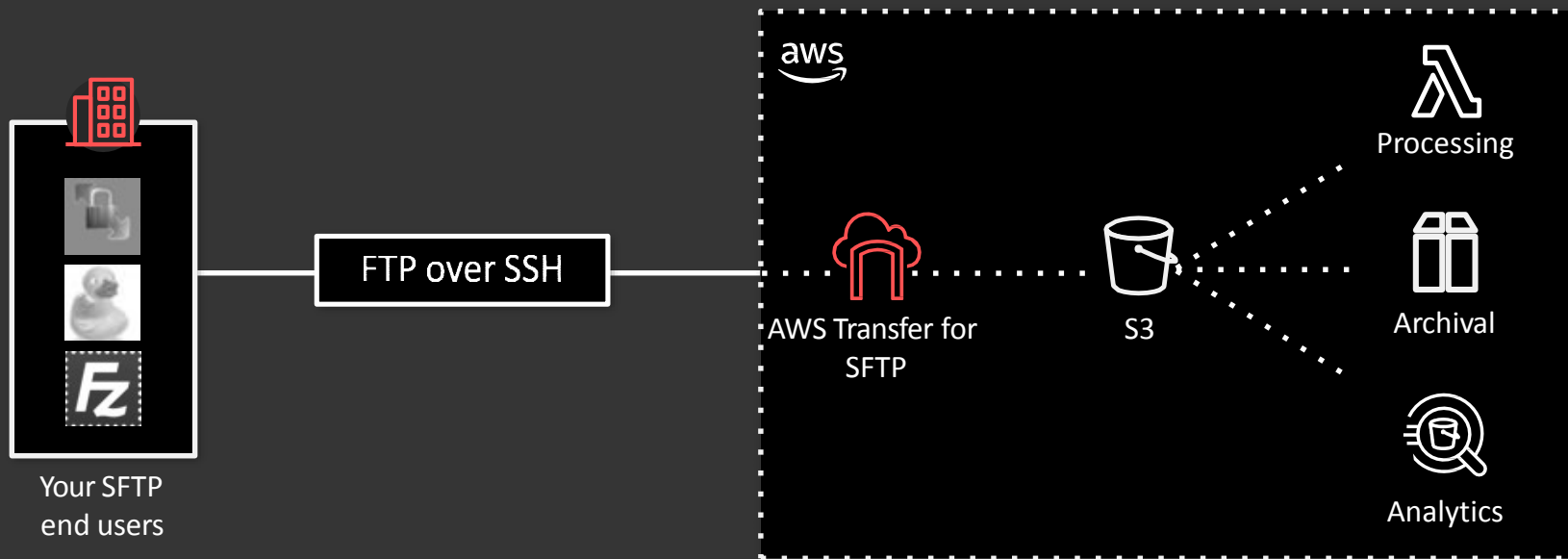


Replicate data to AWS for business continuity



AWS Transfer for SFTP

Fully managed SFTP service for Amazon S3



Integrates with existing
Active Directory or
LDAP



Highly available, and
elastically scalable



Data available immediately
for archiving and processing
in S3



AWS Snow* family



AWS Snowball

- 80 TB capacity/10 G network
- Data encryption end-to-end
- Rugged 8.5-G impact case
- Rain and dust-resistant

AWS Snowball Edge – storage-optimized

- 100 TB capacity/10 Gb network
- Data encryption end-to-end
- Rugged 8.5 G impact case
- Rain and dust-resistant
- Compute and storage for hybrid/edge workloads
- Rack-mountable, clusterable

AWS Snowball Edge – compute-optimized

- 52 vCPUs or NVIDIA G100 GPU
- 42 TB capacity/100 Gb/s networking
- Data encryption end-to-end
- Rugged 8.5 G impact case
- Rain and dust-resistant
- Compute and storage for hybrid/edge workloads
- Rack-mountable, clusterable

AWS Snowmobile

- Exabyte-scale 45-ft. container
- Data encryption end-to-end
- Dedicated security personnel
- GPS tracking, alarm monitoring, 24/7 surveillance, and optional additional security

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS



Amazon FSx for
Windows File Server



Amazon FSx
for Lustre

Object storage



Amazon S3



Amazon S3
Glacier

Hybrid



AWS Storage
Gateway family

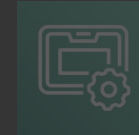
Transport and edge



AWS
DataSync

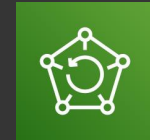


AWS Transfer
for SFTP



AWS Snow*
family

Backup



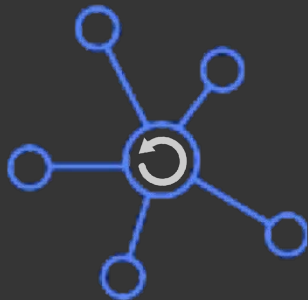
AWS
Backup



AWS Backup

Centrally manage backups across AWS services

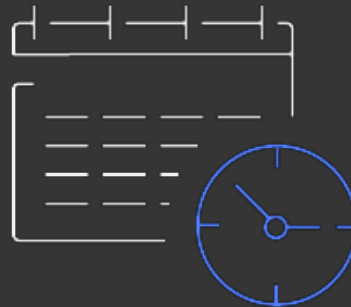
Centralized
backup
management



Policy and tag-
based backup
solution



Automated backup
scheduling



Automated retention
and lifecycle
management



Storage Lab

Thank You!

Q & A