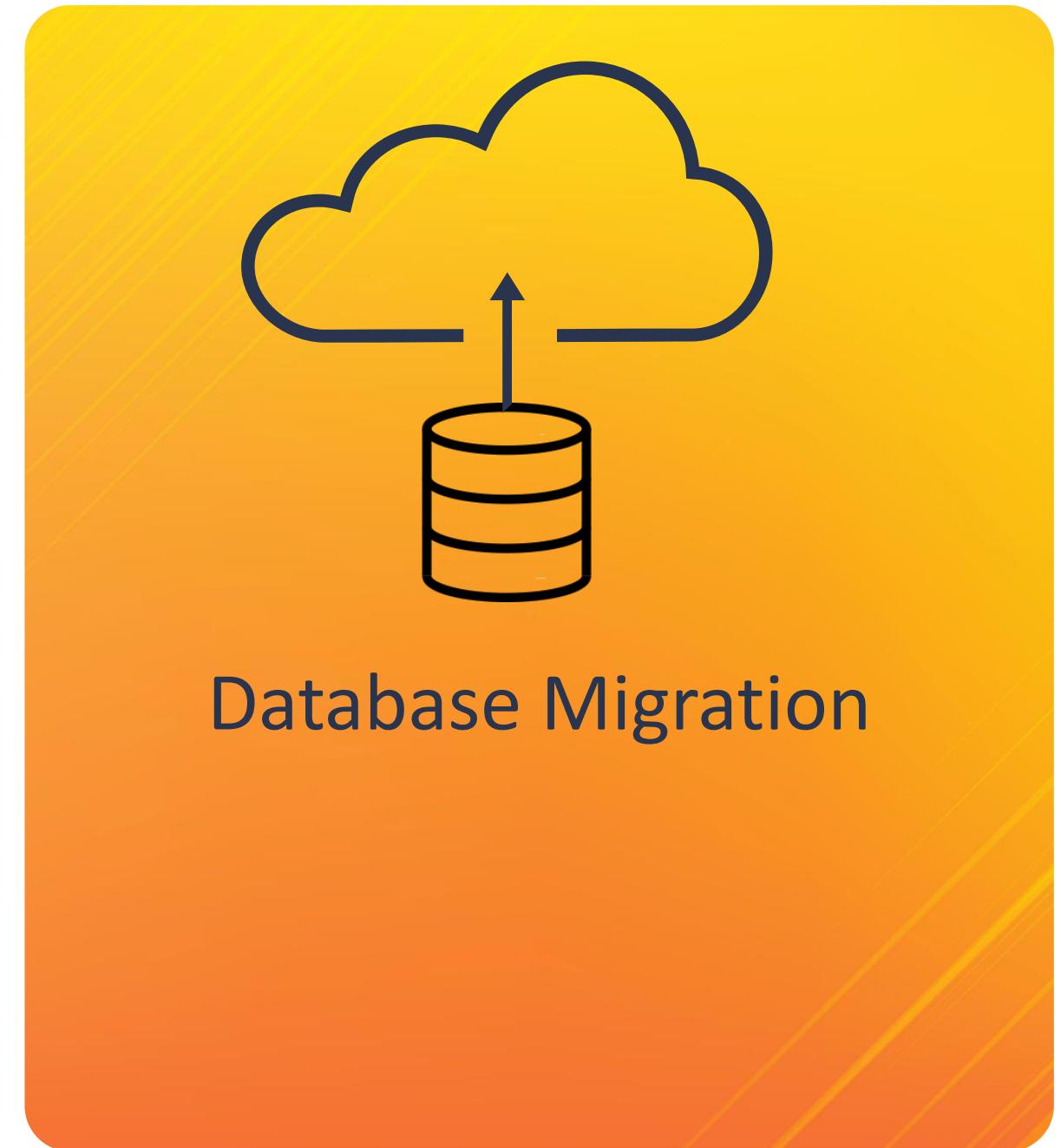




Data Migration services in AWS





Database Migration

Database Migration

Assess

Mobilize

Migrate and Modernize



AWS Database Migration Service – Fleet Advisor



AWS Schema Conversion Tool (AWS SCT)



AWS Database Migration Service (AWS DMS)

← Vendor and 3rd Party Tools & Services →

AWS Programs

AWS Migration Acceleration Program (MAP)

AWS Optimization and Licensing Assessment (AWS OLA)

Database Freedom

Database Migration Accelerator – Fixed Price

Data Lab

Native Database Migration Tools for Homogenous Migration

- Many DBAs are familiar with a wide range of tools that handle database migration and replication.
- These tools are typically offered by database engine vendors and third-party companies.
 - Full backup/restore
 - Microsoft SQL Server databases - Full and differential backup (.bak) files.
 - Oracle RMAN
 - Logical backup or export
 - Various 3rd Party backup software
 - Native database high availability (HA) tools
 - Microsoft SQL Server
 - Oracle Data Guard
 - Change Data Capture (CDC) replication
 - Microsoft SQL Server CDC
 - Oracle GoldenGate, Qlik, and Talend

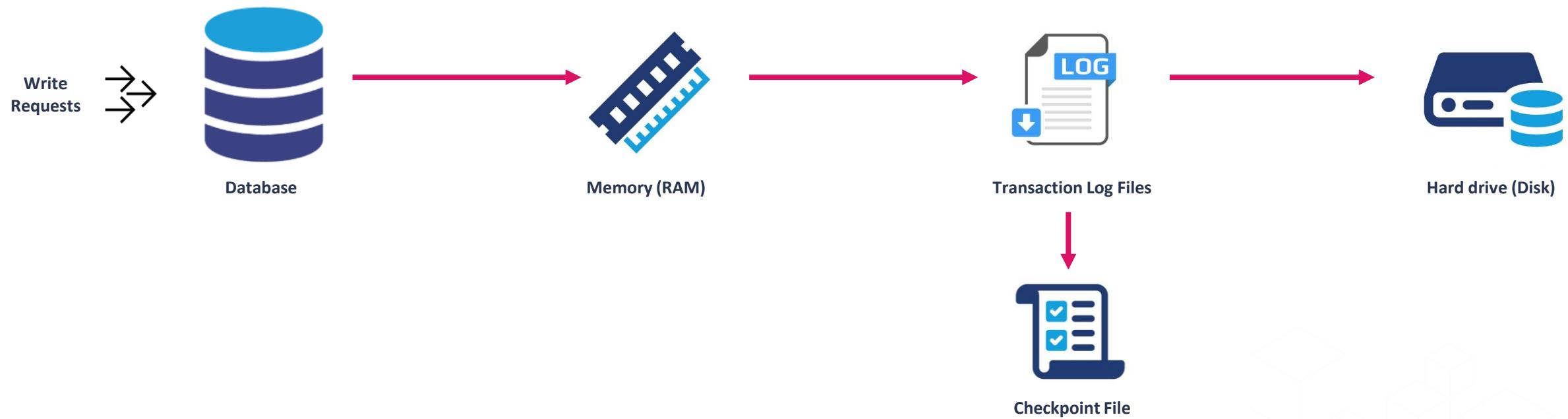




Database Migration Basic Concepts

Transaction Logs

- A transaction log (also transaction journal, database log, binary log or audit trail) records all transactions executed on a database.

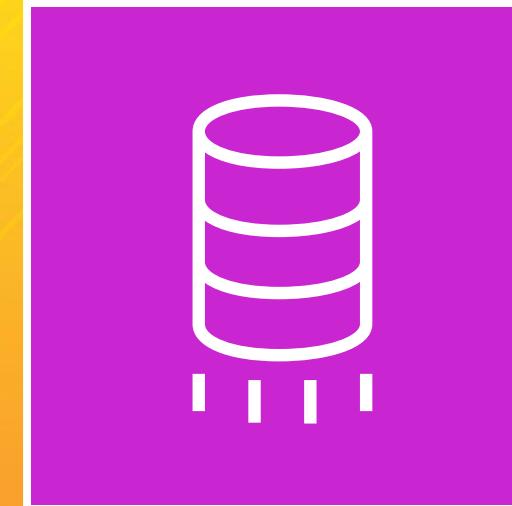


- The transaction log serves two main purposes:
 1. it allows the database to undo or redo transactions in case of a failure
 2. it provides an audit trail of the database activity

Change data capture (CDC)

- Change data capture (CDC) is a specific technology that recognizes, tracks, and delivers data changes in a database.
- CDC looks for changes in a database, and when found, it records it. This record may be stored either in the same database or in externally.
- Each database engine has specific configuration requirements for exposing this change stream to a given user account. Most engines require some additional configuration to make it possible for the capture process to consume the change data in a meaningful way, without data loss. For example, Oracle requires the addition of supplemental logging, and MySQL requires row-level binary logging (bin logging).

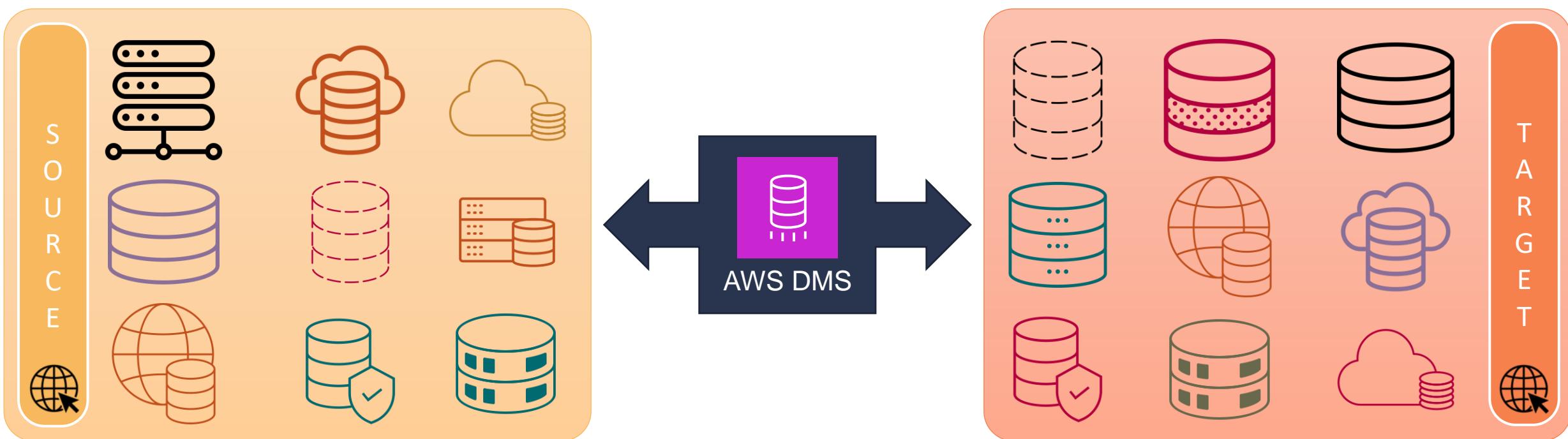




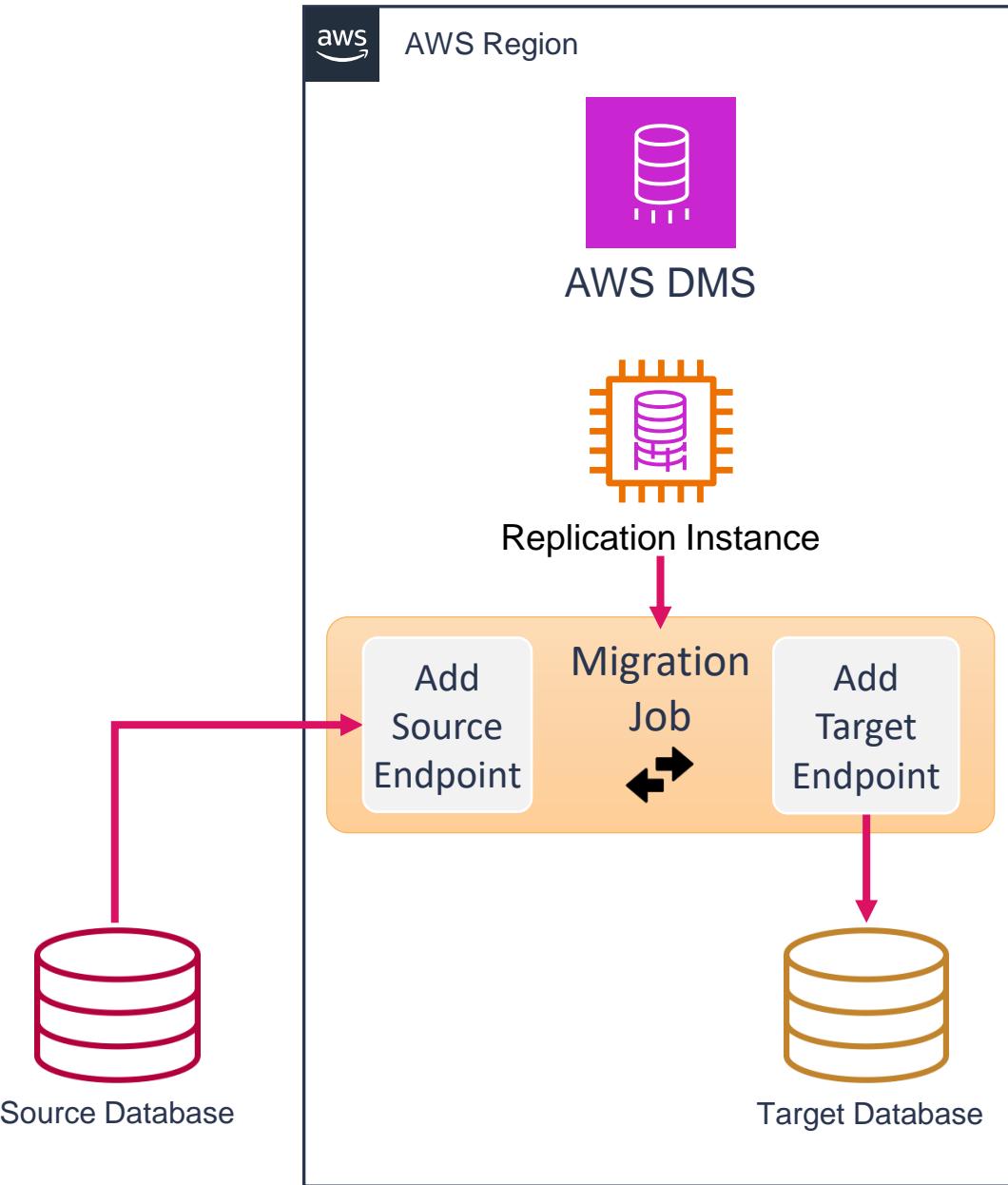
AWS Database Migration
Service (AWS DMS)

AWS Database Migration Service (AWS DMS)

- AWS DMS helps you migrate relational databases, data warehouses, NoSQL databases, and other types of data stores into the AWS Cloud or between combinations of cloud and on-premises setups.
 - It supports homogeneous migrations as well as heterogeneous migrations between different database platforms.



AWS DMS – Architecture



- At least one of the endpoint (source or target) must be on an AWS service.
- Step 1
 - Setup a Replication Instance (a managed EC2 instance that runs replication software)
- Step 2
 - Add source and target databases
- Step 3
 - Start the migration job

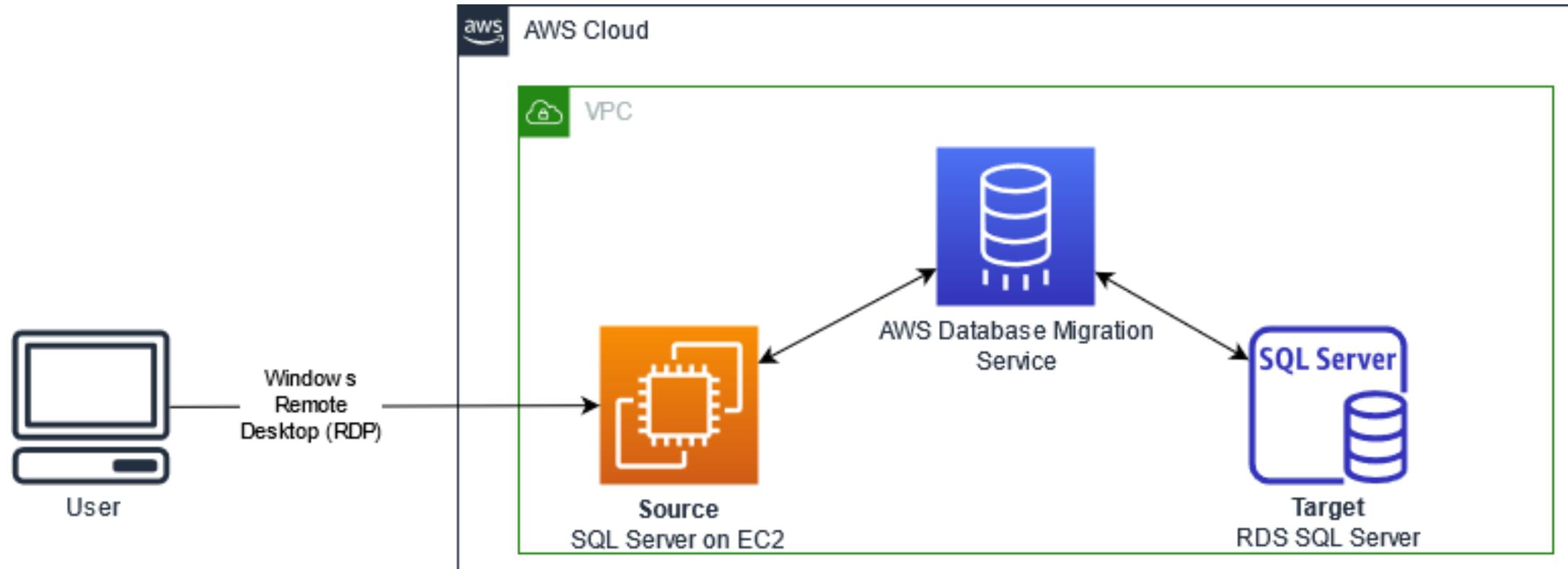


AWS DMS – Replication Types

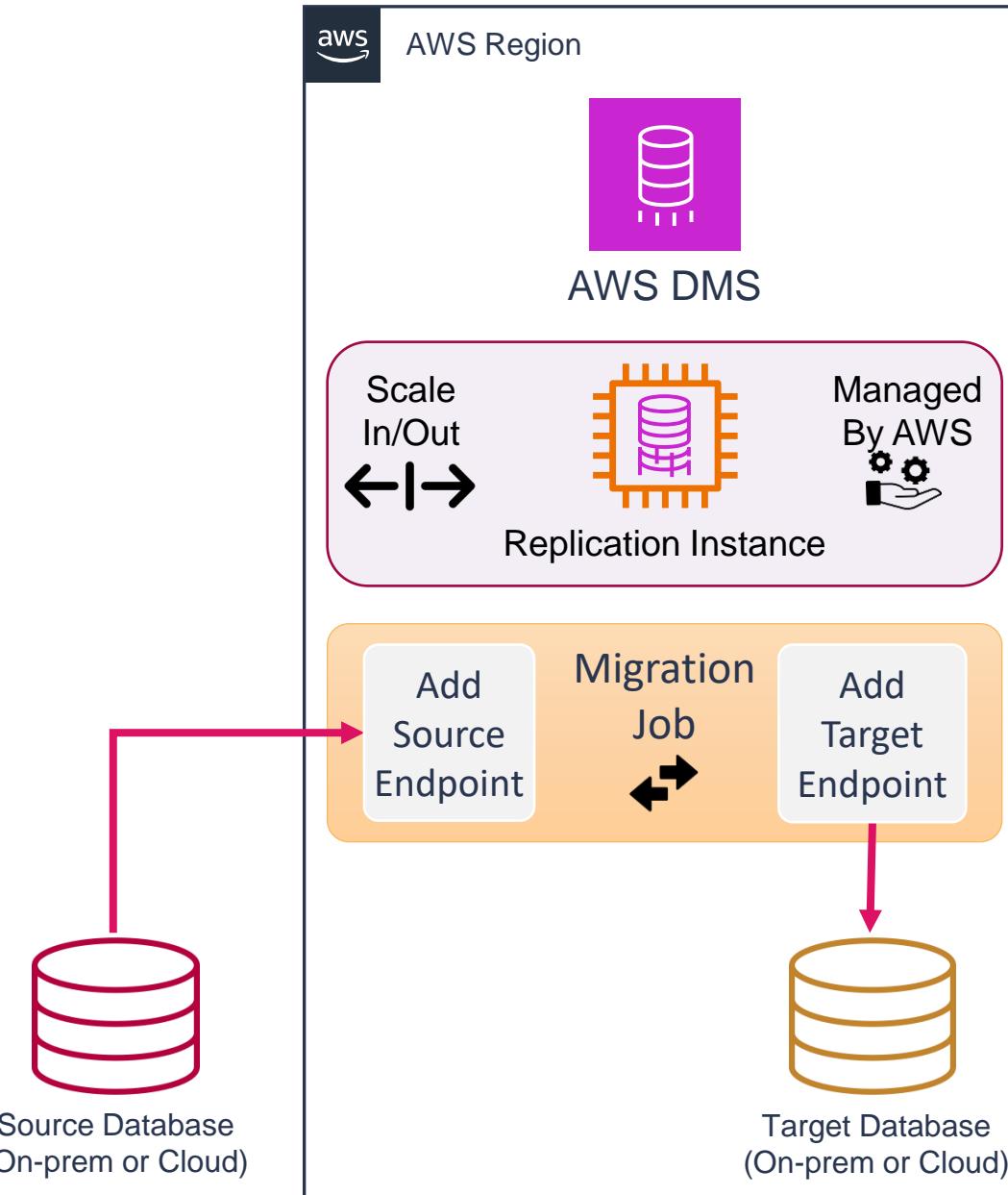
- Migrate existing data (Full load Only)
 - Perform a one-time migration from the source endpoint to the target endpoint.
- Migrate existing data and replicate ongoing changes(Full load and CDC)
 - Perform a one-time migration from the source to the target, and then continue replicating data changes from the source to the target.
- Replicate data changes only(CDC only)
 - Don't perform a one-time migration, but continue to replicate data changes from the source to the target.

AWS Database Migration Workshop

- Microsoft SQL Server to Amazon RDS for SQL Server



AWS DMS Serverless

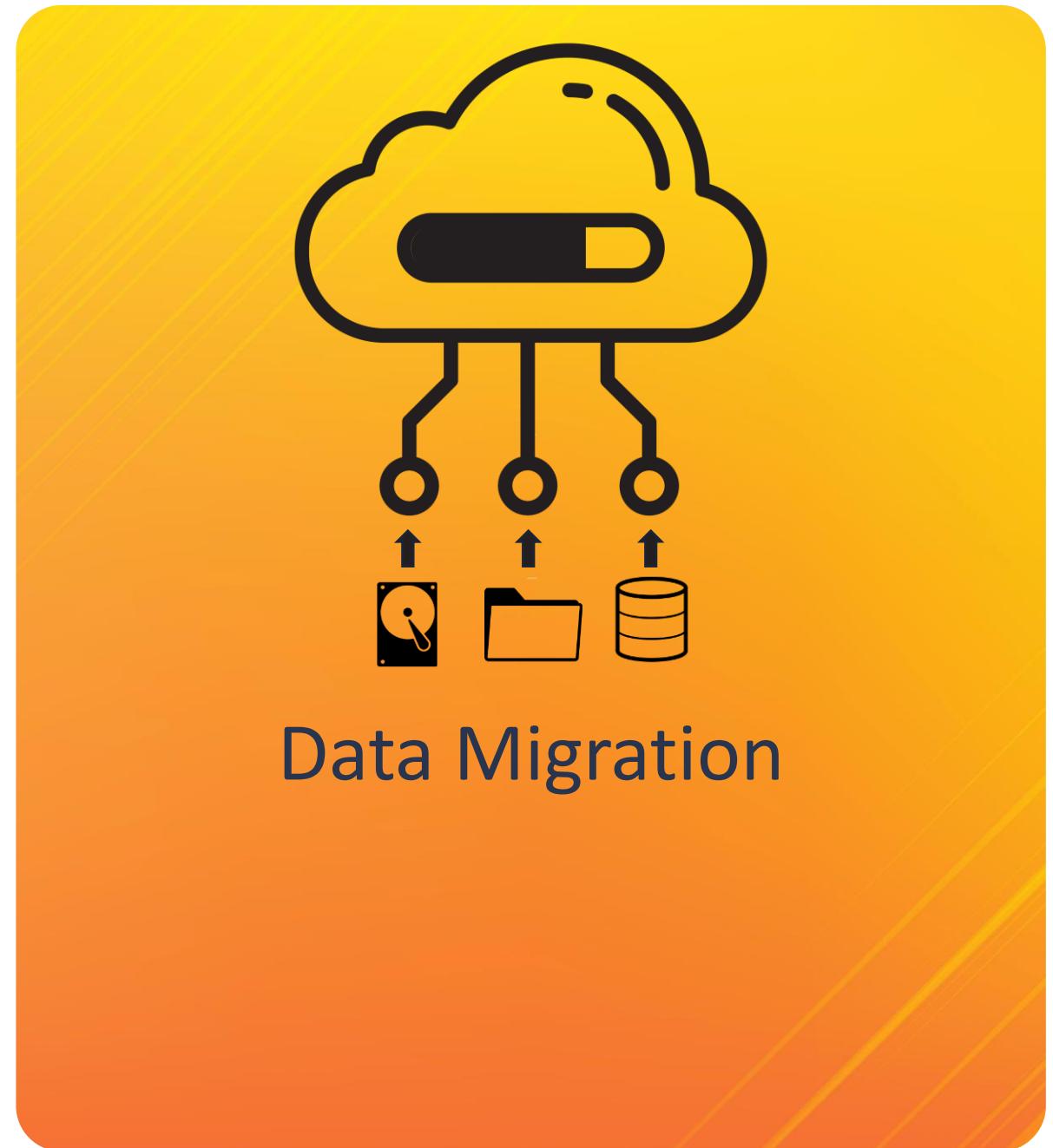


- AWS DMS Serverless is a feature that provides automatic provisioning, scaling, built-in high availability, and a pay-for-use billing model.
- The Serverless feature eliminates replication instance management tasks like capacity estimation, provisioning, cost optimization, and managing replication engine versions and patching.

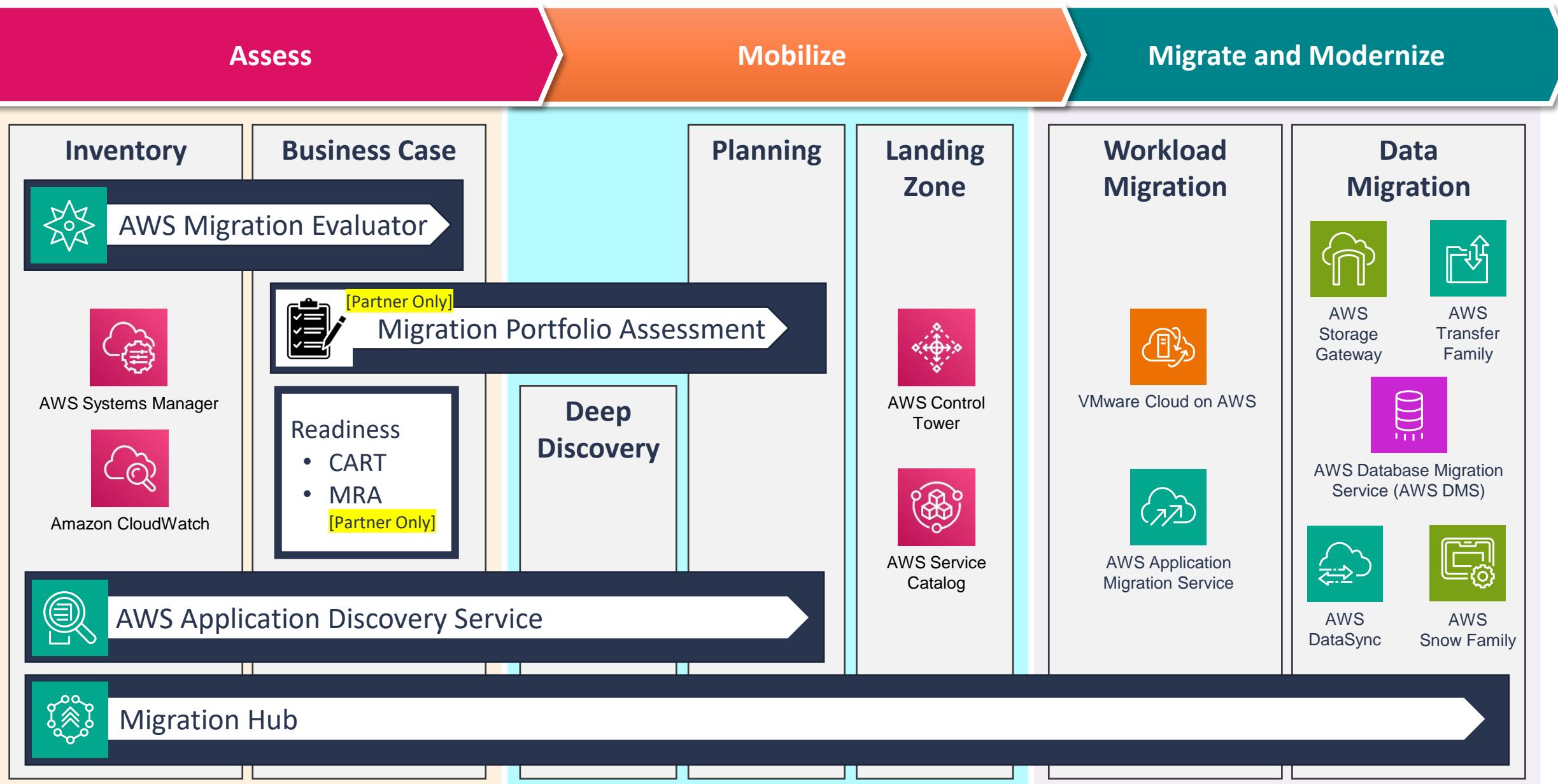
Database Migration

- How about heterogenous database migration?





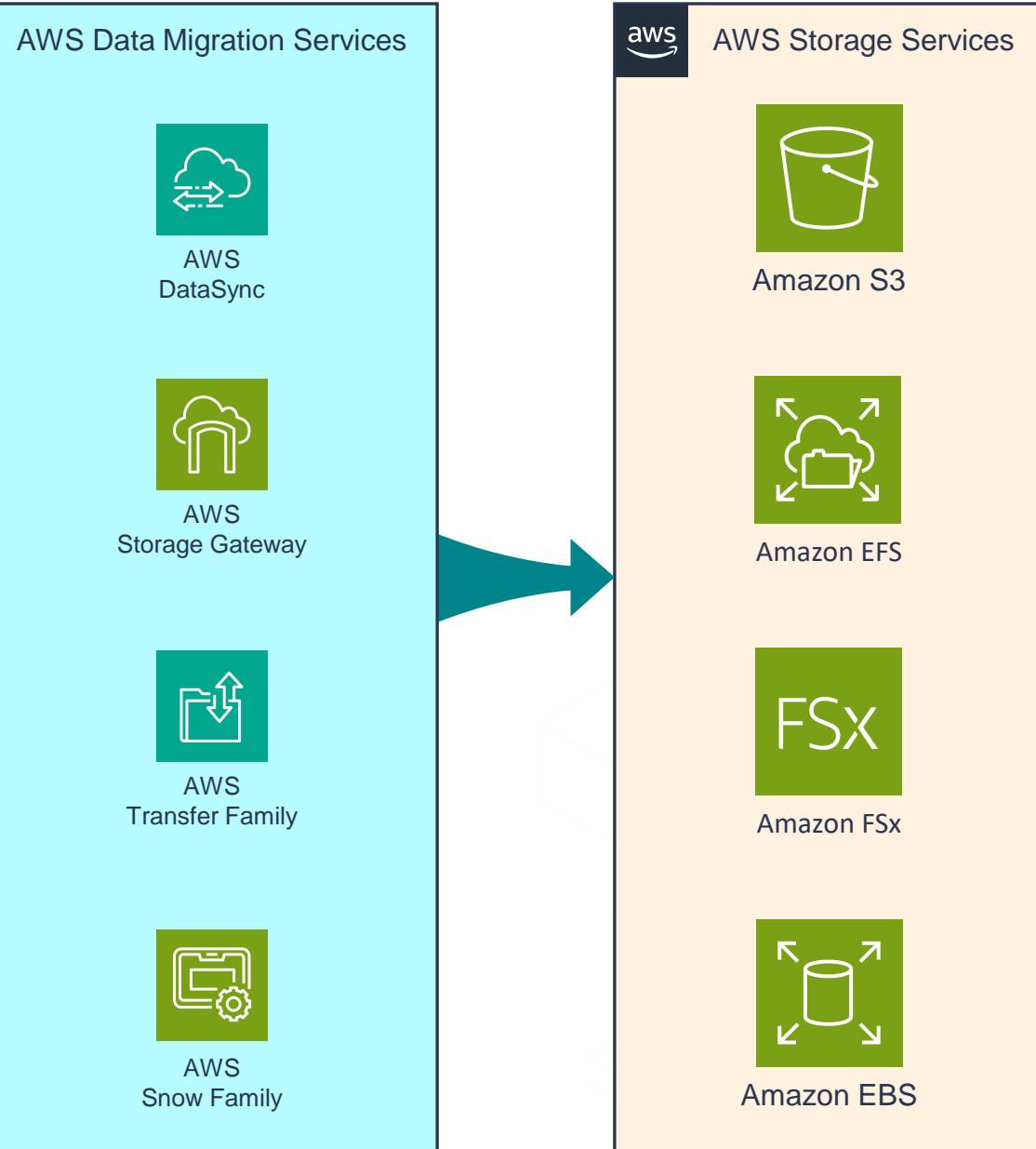
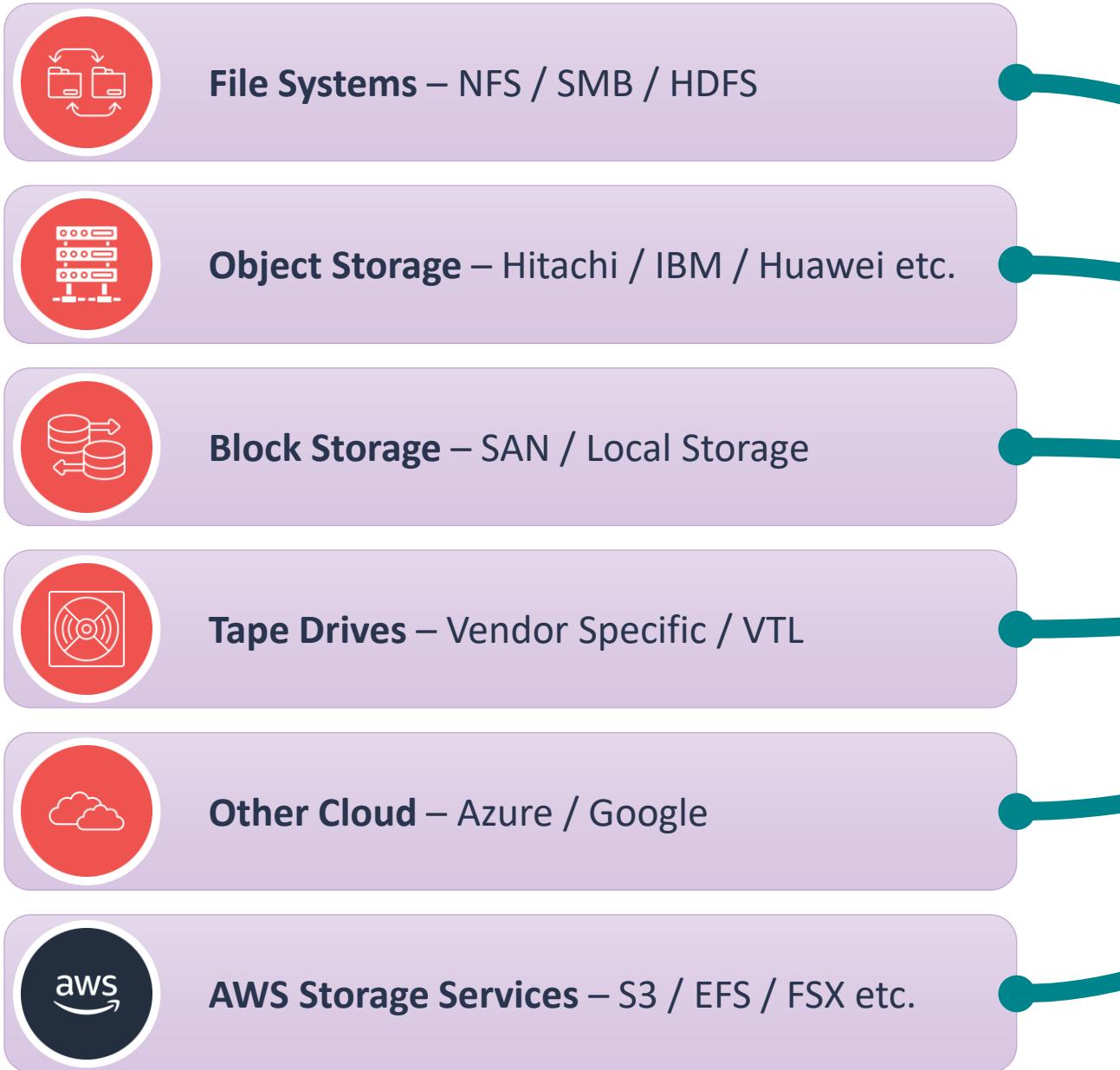
Data Migration





Data Migration

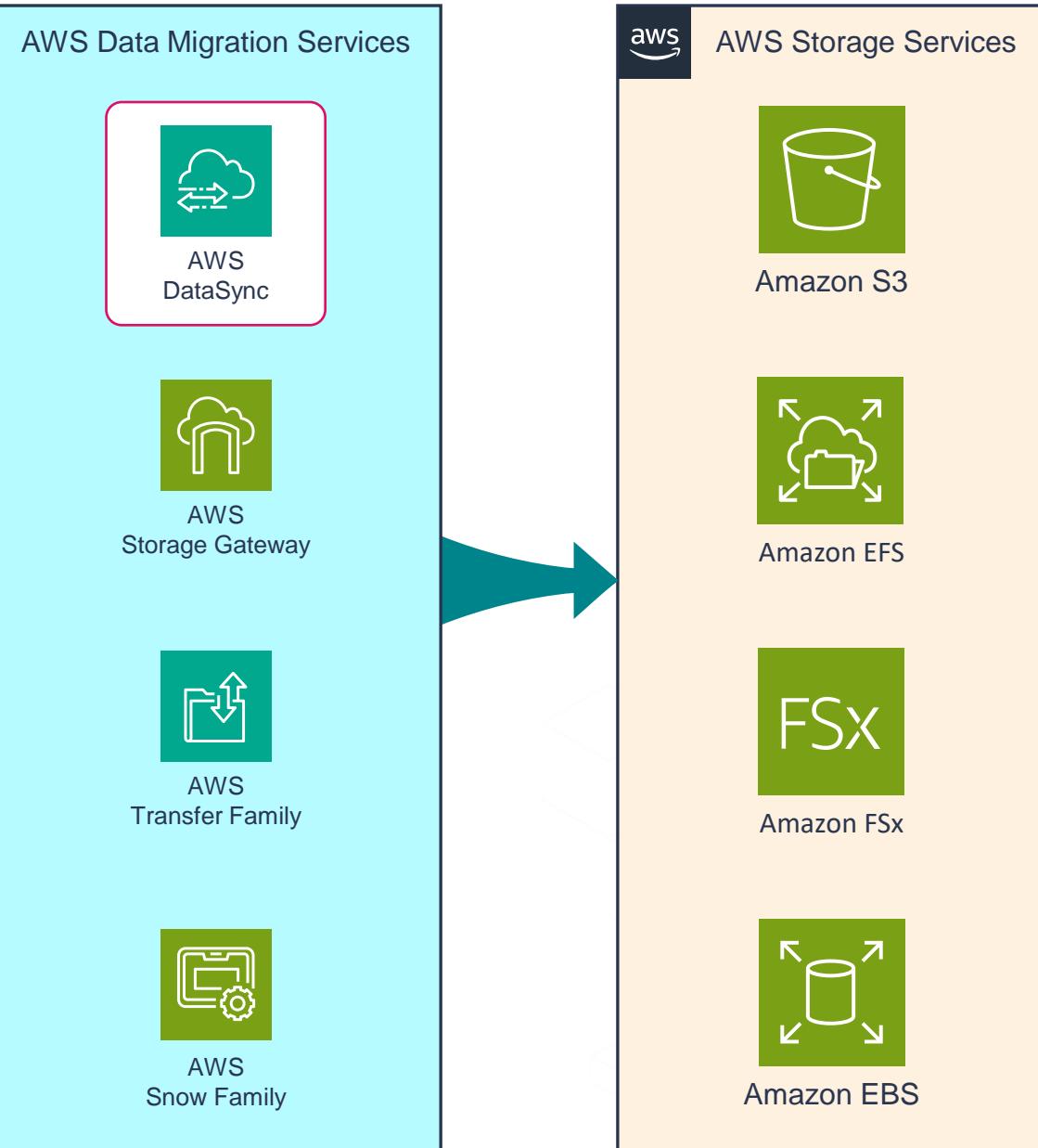
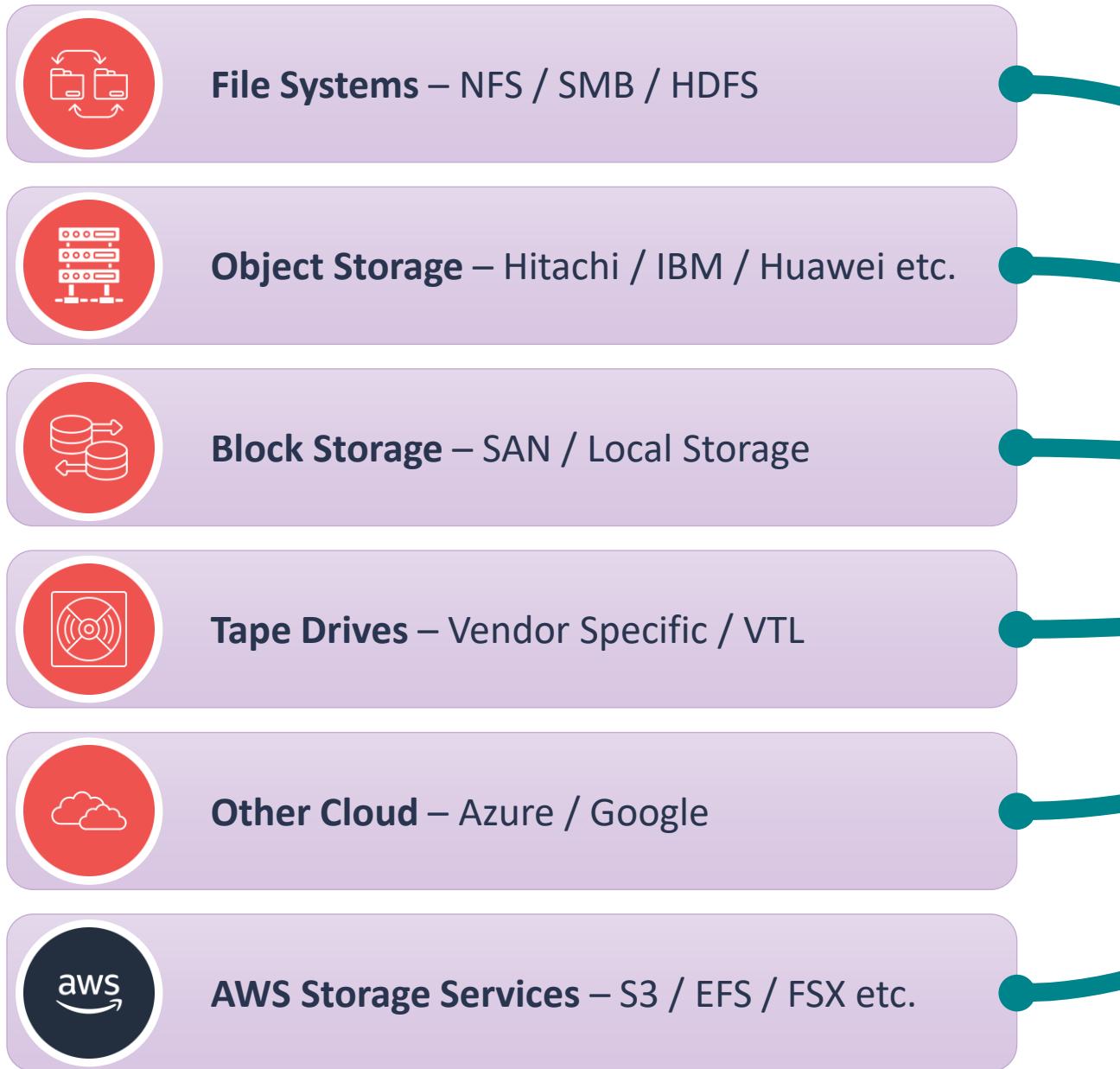
Your Data Portfolio



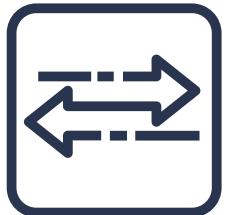


AWS DataSync

AWS DataSync



AWS DataSync – Architecture Components



Agent (A Virtual Machine)

- Agents read data from or write to your on-premises locations.
- Can be deployed on VMware, Hyper-V, KVM and as EC2 instance



Locations (Source or Target)

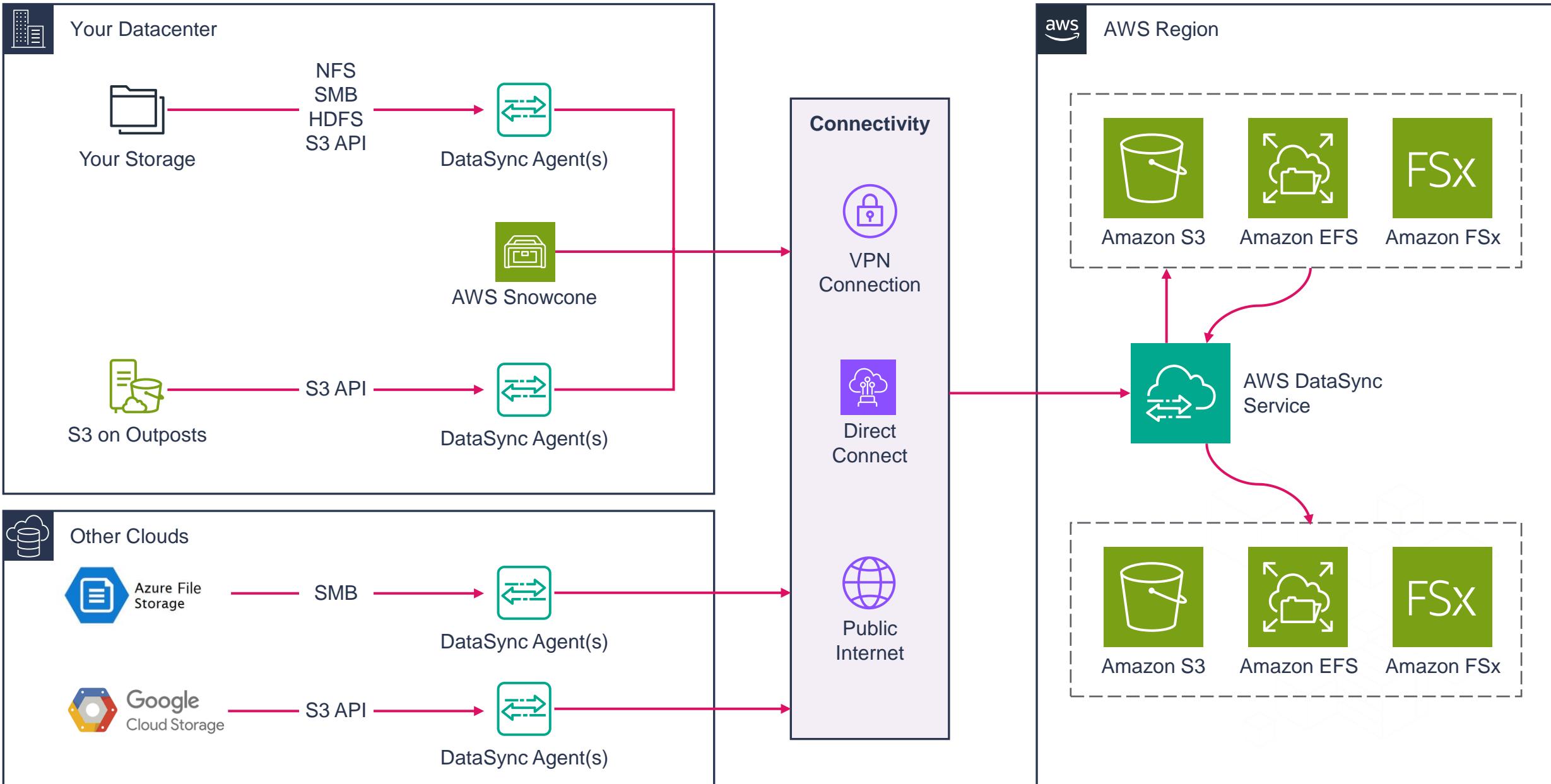
- Locations are endpoints for tasks, such as an on-premises file system or AWS storage service.
- NFS, SMB, HDFS, Object storage, Amazon EFS, Amazon FSx, Amazon S3

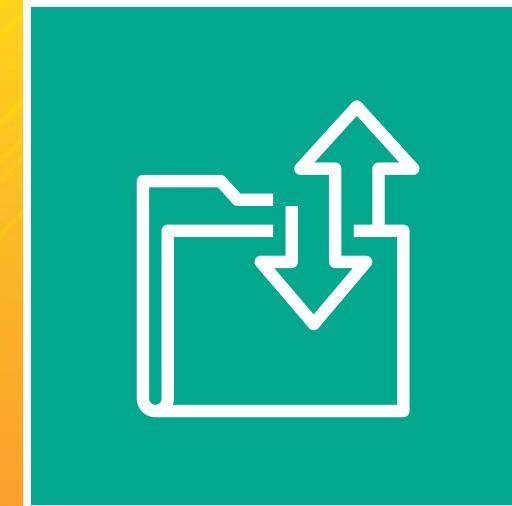


Tasks (Data migration job)

- Tasks are configurations for data transfer and synchronization between two locations e.g. Schedule, Exclusion, Bandwidth, Logging
- DataSync Task = Source location + Target Location + Configuration

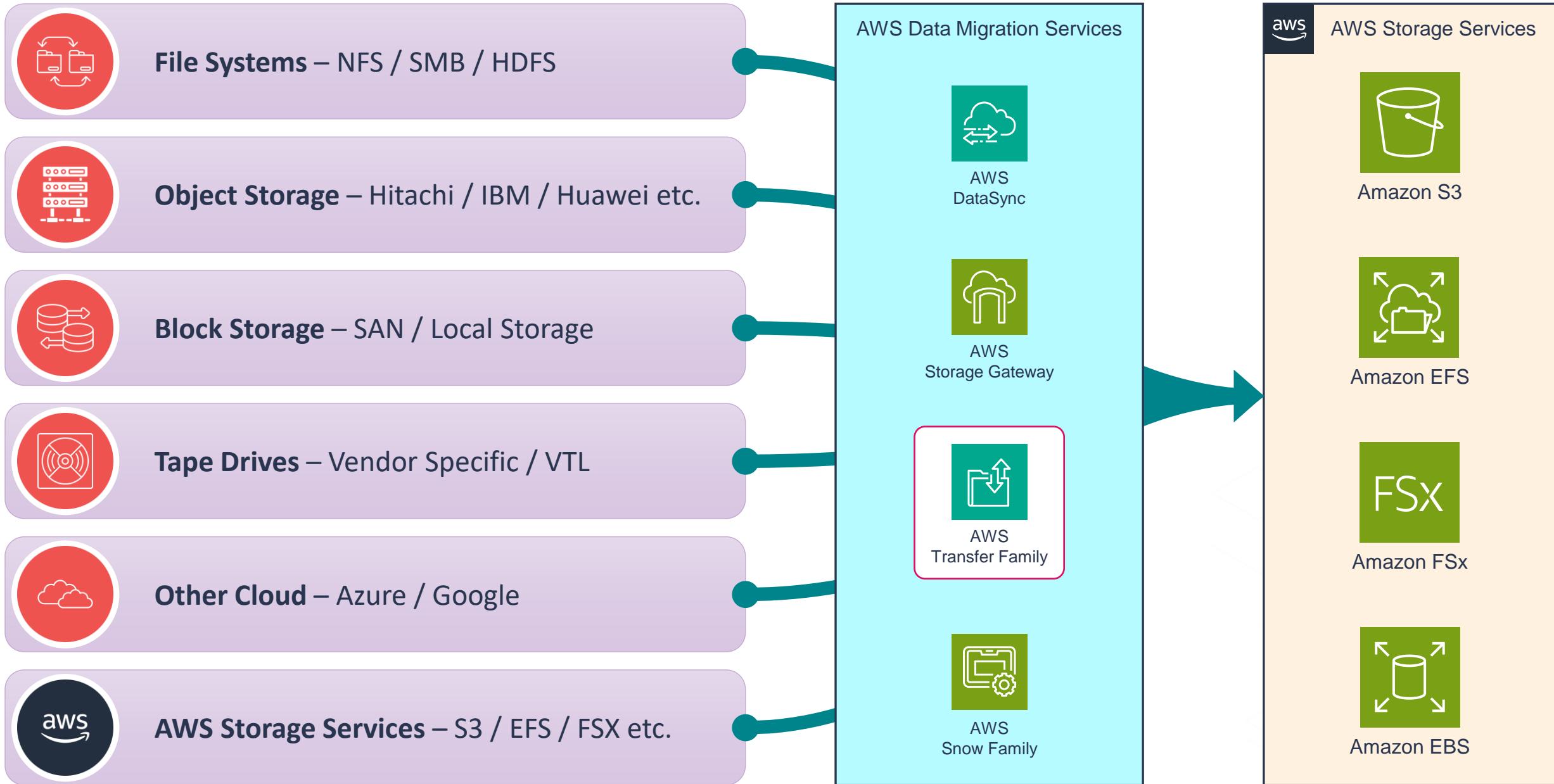
AWS DataSync Architecture





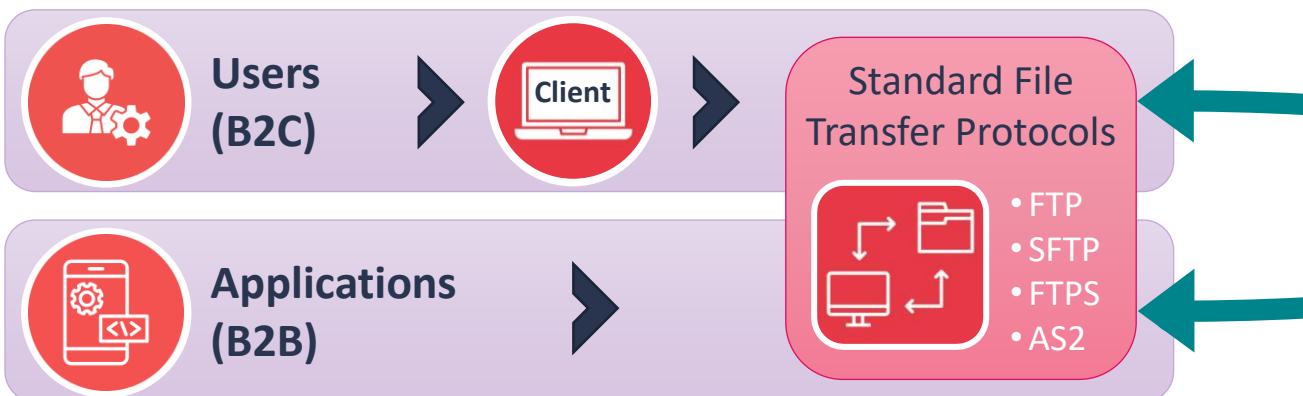
AWS Transfer Family

AWS Transfer Family – A cloud based Managed File Transfer (MFT)

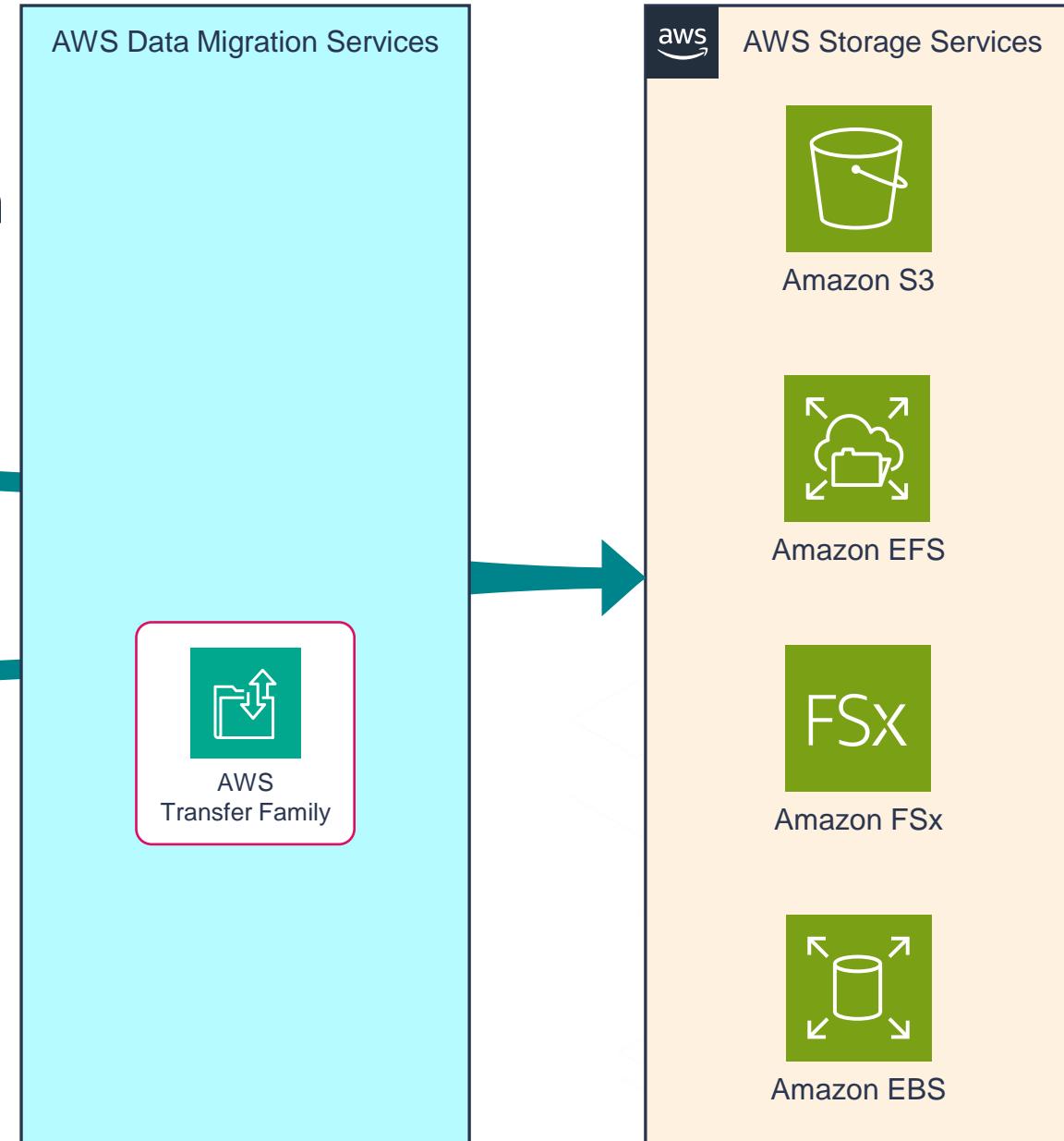


AWS Transfer Family – A cloud based Managed File Transfer (MFT)

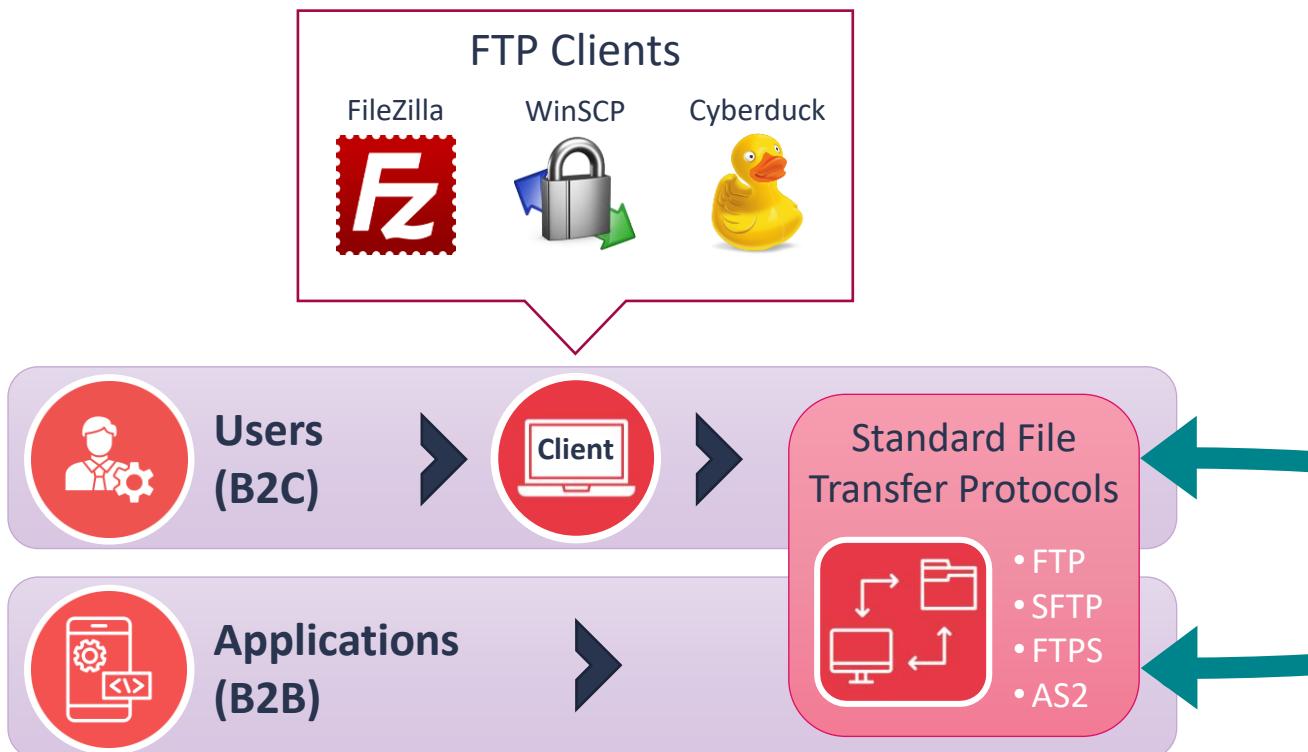
- The AWS Transfer Family offers you a managed file transfer (MFT) service used for transferring files over common file transfer protocols.



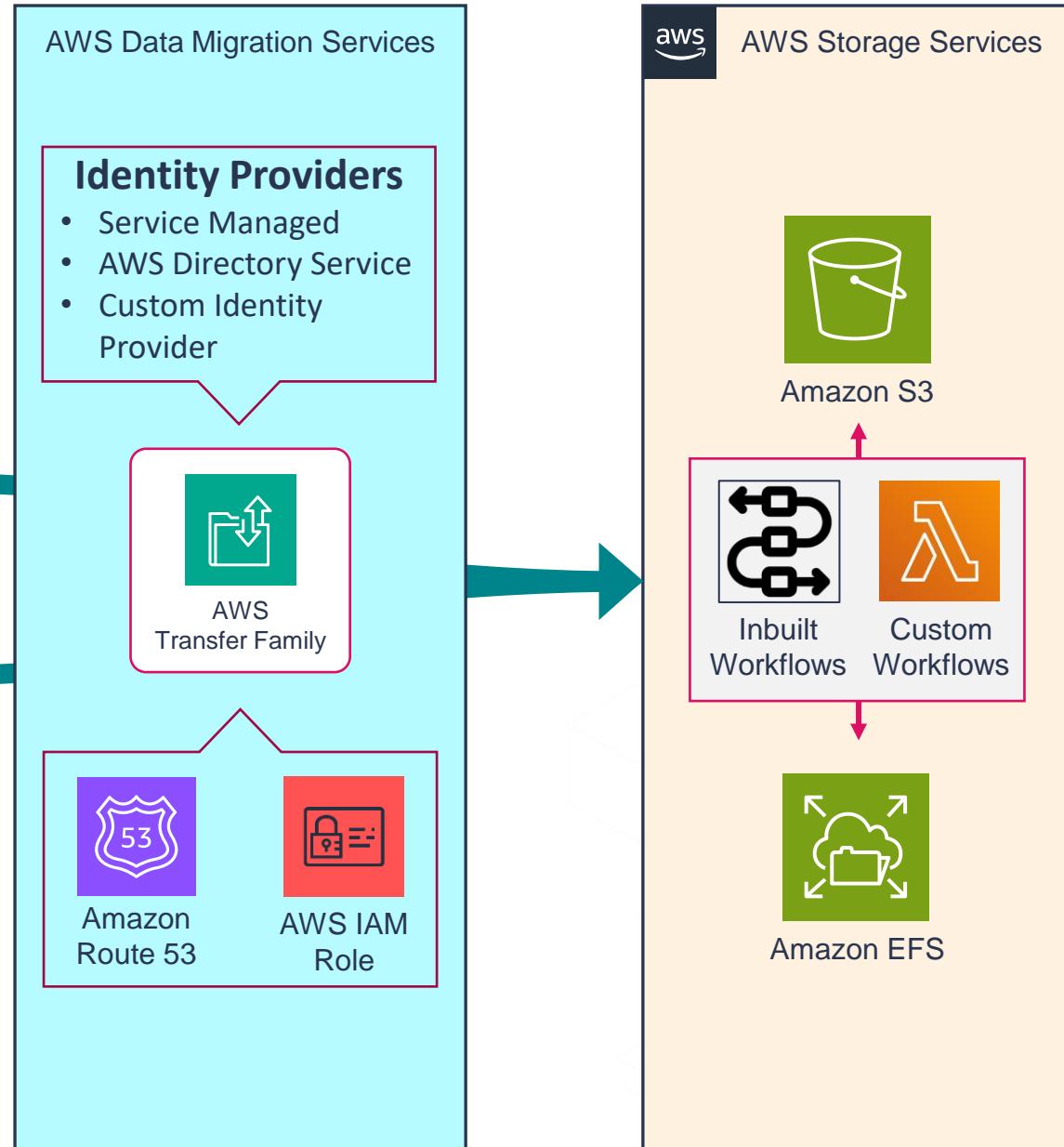
- Files are transferred directly into and out of AWS Storage services without any management overhead of maintaining servers and storage.



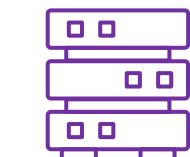
AWS Transfer Family – A cloud based Managed File Transfer (MFT)



- FTP (File Transfer Protocol) - unencrypted file transfer protocol
- SFTP (SSH File Transfer Protocol) - file transfer over Secure Shell
- FTPS (File Transfer Protocol Secure) - file transfer protocol with TLS encryption
- AS2 (Applicability Statement 2) - messaging protocol for exchanging business-to-business data

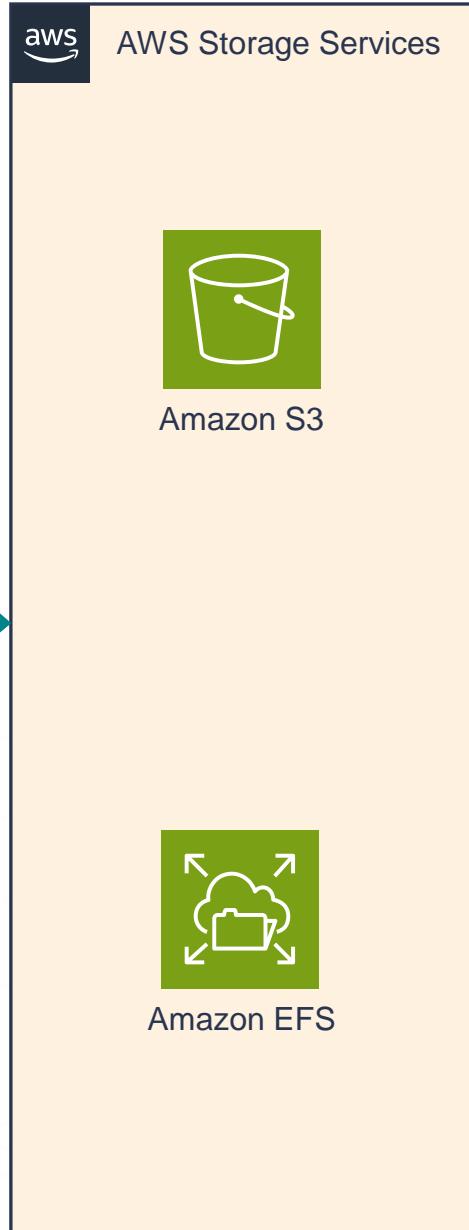
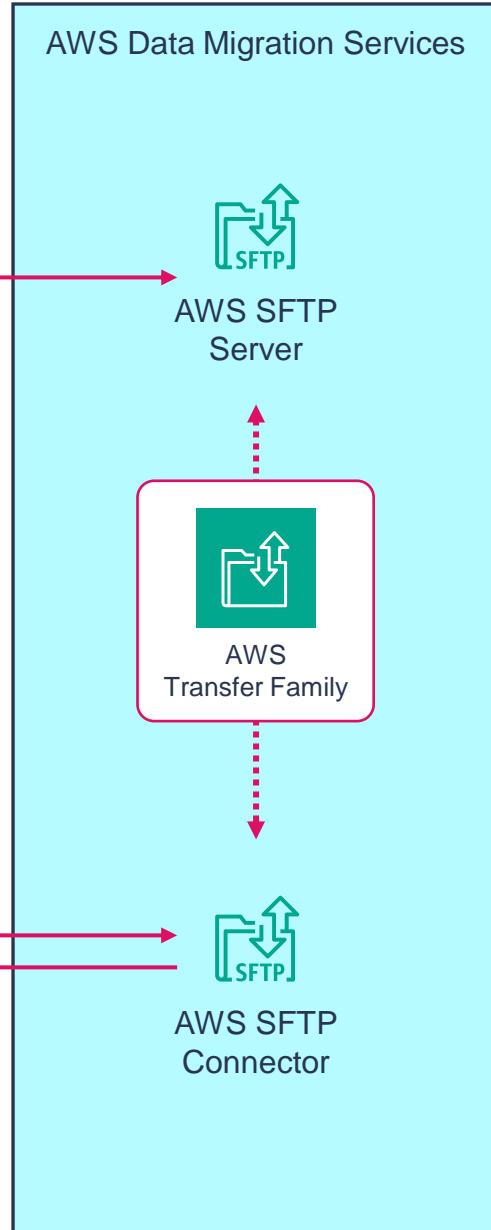


AWS Transfer Family – A cloud based Managed File Transfer (MFT)



Remote SFTP source

Pull
Push





AWS Snow Family

AWS Snow Family

- Physical devices offering compute and offline data transfer capabilities in rugged edge locations.



AWS Snowcone



Compact and portable device,
purpose-build for use outside of
a traditional data centre



AWS Snowball Edge

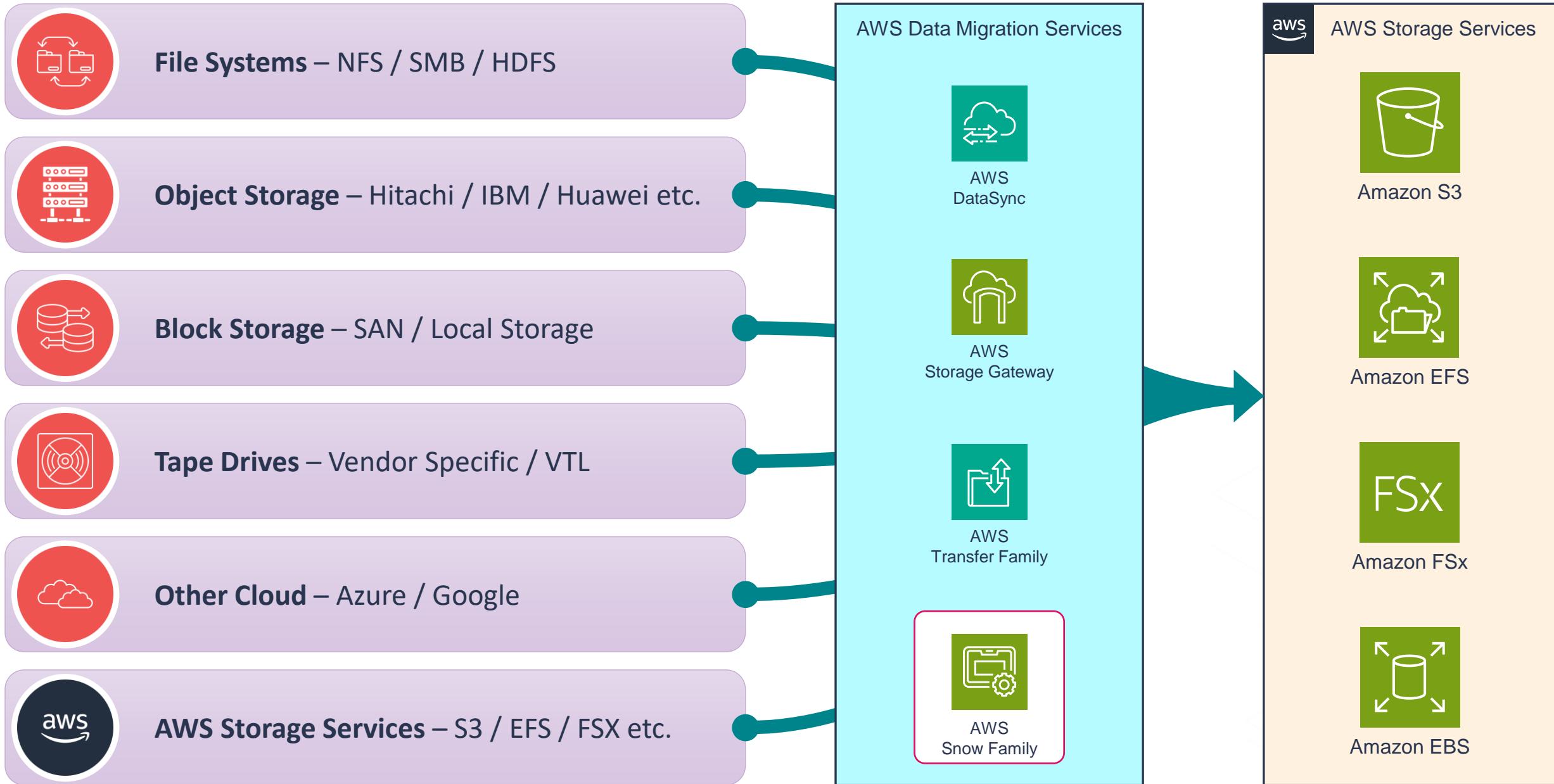


Compute-optimized or storage-
optimized device for use outside
a traditional data centre

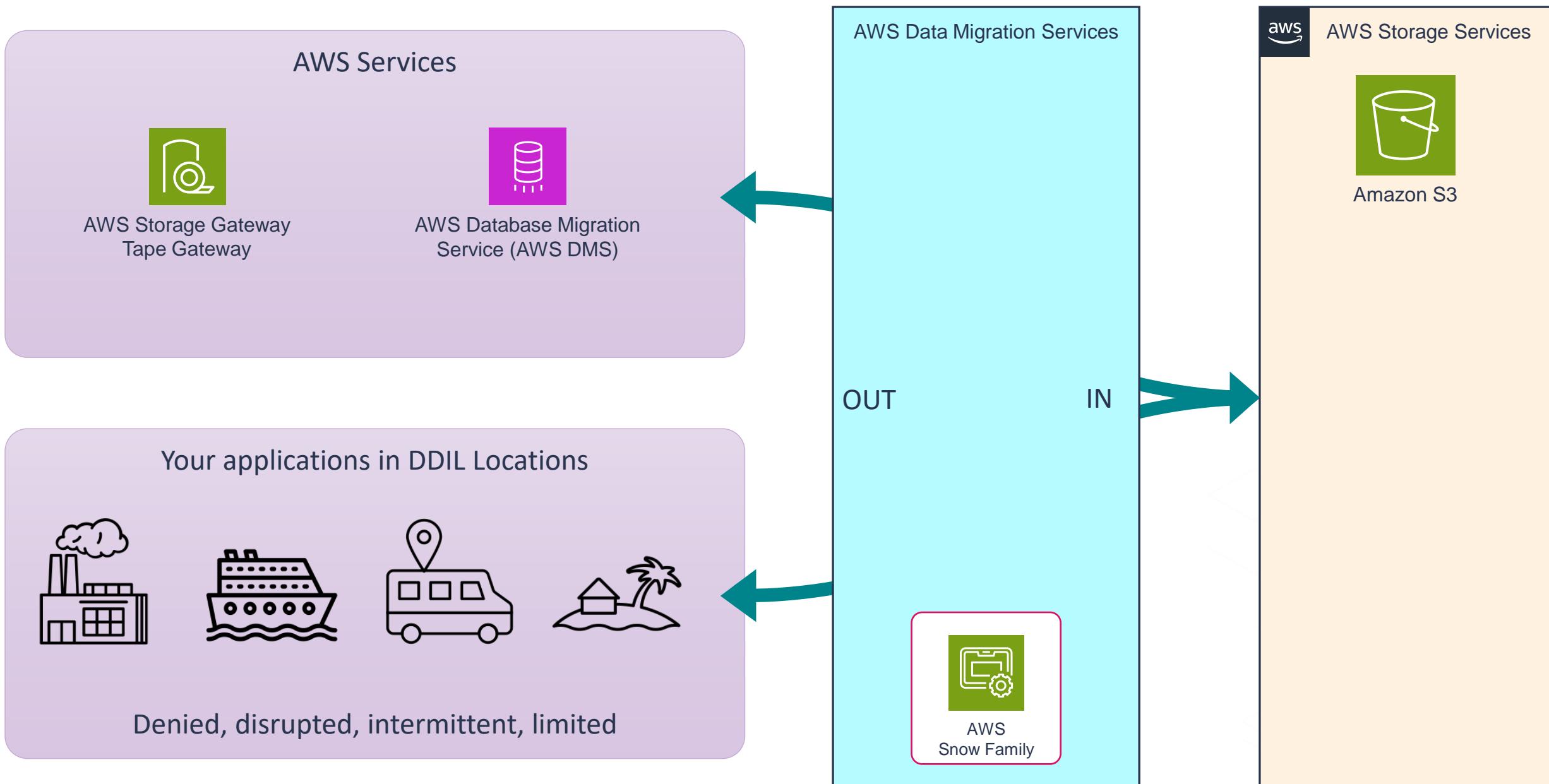
Available for clustering, scaling, and connectivity



AWS Transfer Family – A cloud based Managed File Transfer (MFT)



AWS Transfer Family – A cloud based Managed File Transfer (MFT)



AWS OpsHub for AWS Snow Family

AWS OpsHub Dashboard for AWS Snow Family

Key features displayed:

- Transfer data:** Upload files to the device so that they can be physically moved to another location or back to the AWS cloud when the device is returned. (Status: Inactive, Configure manually)
- Sync data:** Sync data on your Snowcone with Amazon S3, Amazon Elastic File System (Amazon EFS), or Amazon FSx for Windows File Server. (Agent IP address: 10.111.62.82)
- Start computing:** Run pre-installed software on virtual servers (instances) locally on the device. (Status: 1 of 1 Instances running)
- Devices (1):** MySNC-10.111.60.176 (IP: 10.111.60.176). Status: 4 GB Memory (RAM) available (80% usage), 2 Available CPU (67% usage).

