



Data Migration services in AWS





Database Migration

Database Migration

Assess



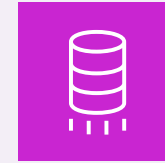
AWS Database Migration
Service – Fleet Advisor

Mobilize



AWS Schema Conversion
Tool (AWS SCT)

Migrate and Modernize



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

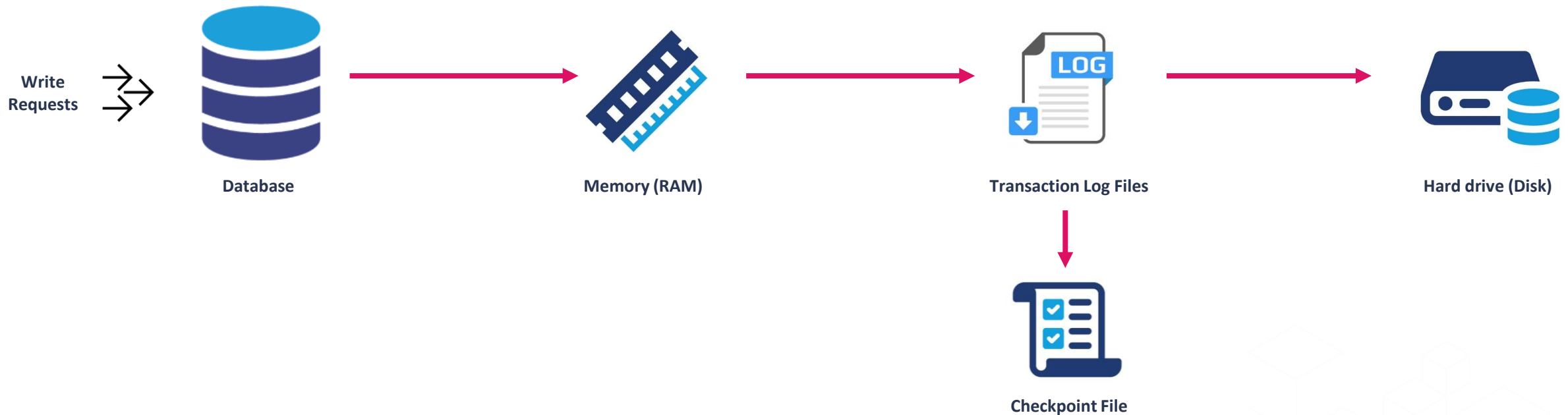




Database Migration Basic Concepts

Transaction Logs

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

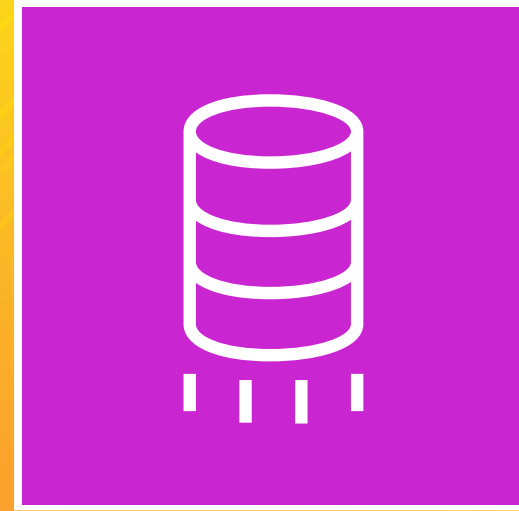


- The transaction log serves two main purposes:
 1. it allows the database to undo or redo transactions in case of a failure
 2. it provides an audit trail of the database activity

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).

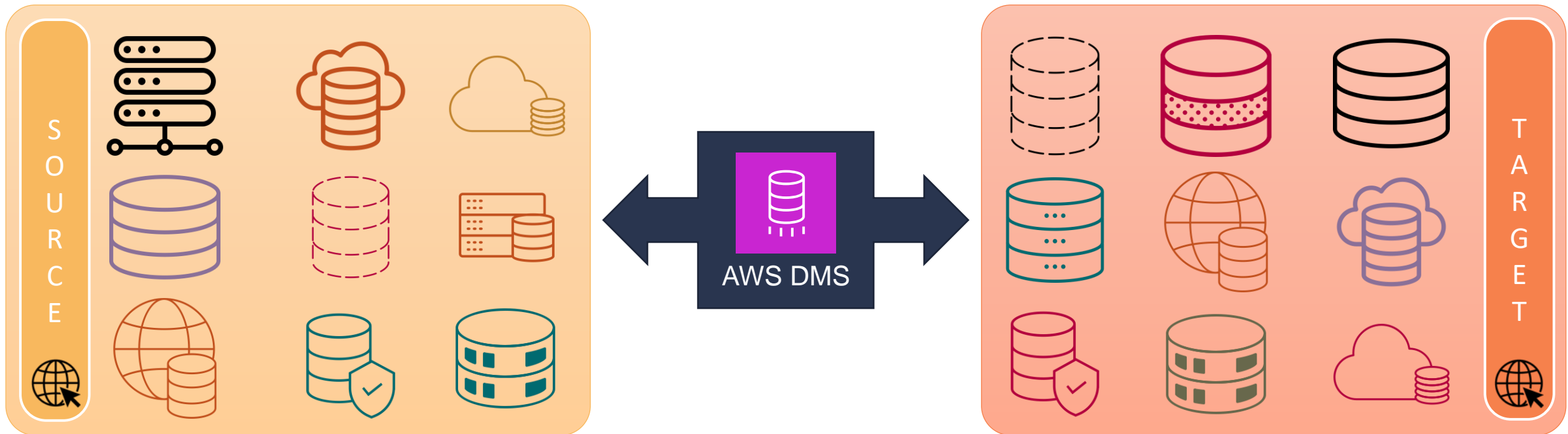




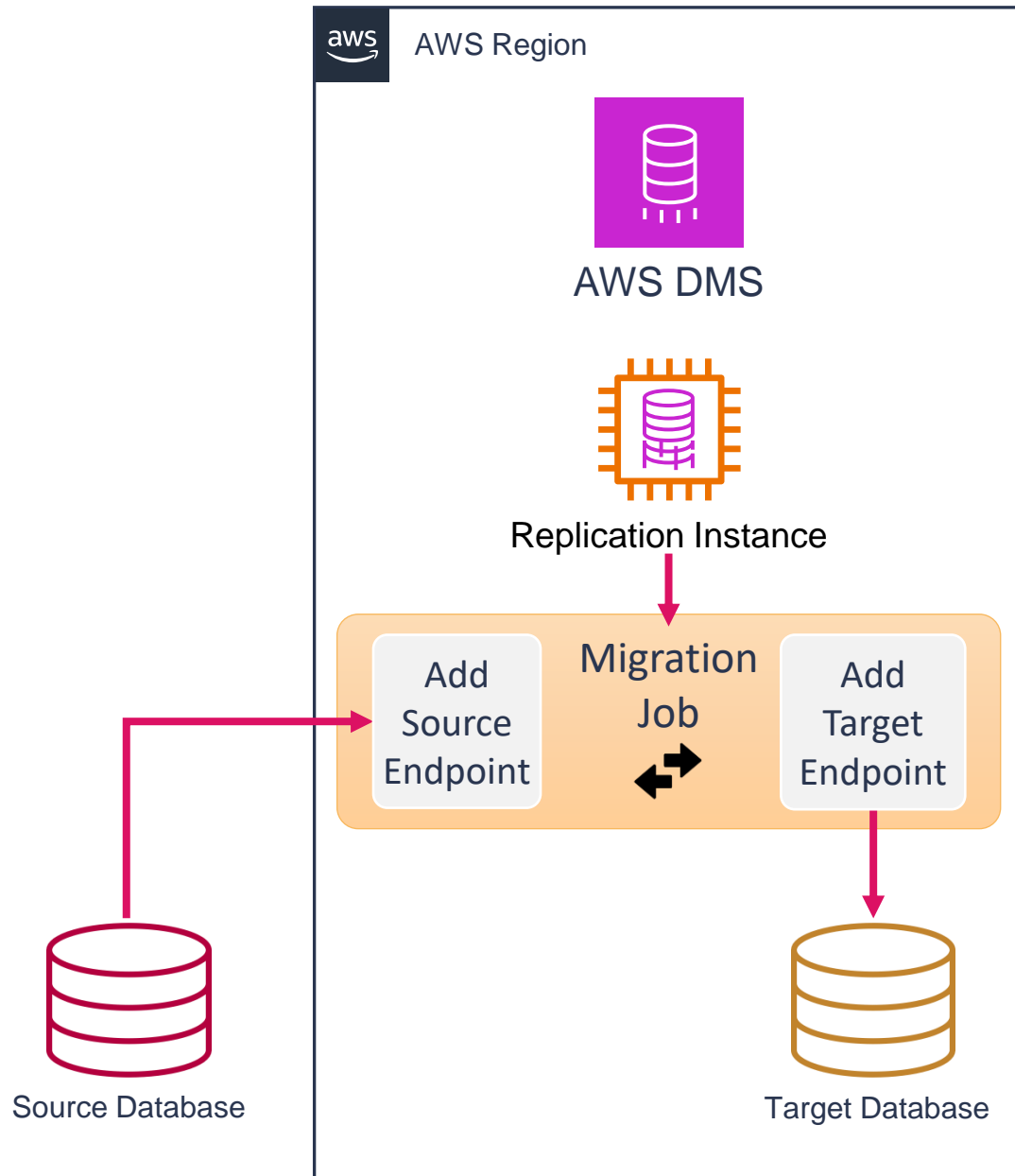
AWS Database Migration Service (AWS DMS)

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

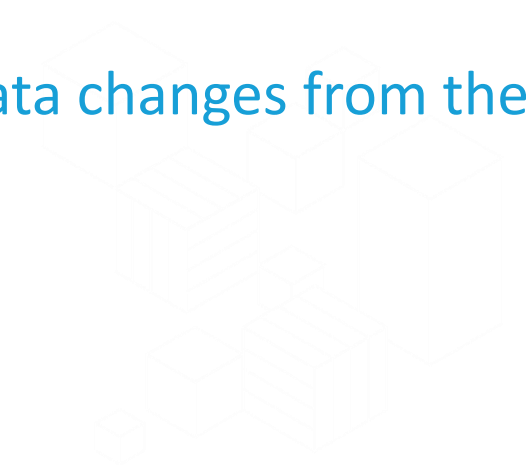


- At least one of the endpoint (source or target) must be on an AWS service.
- Step 1
 - Setup a Replication Instance (a managed EC2 instance that runs replication software)
- Step 2
 - Add source and target databases
- Step 3
 - Start the migration job



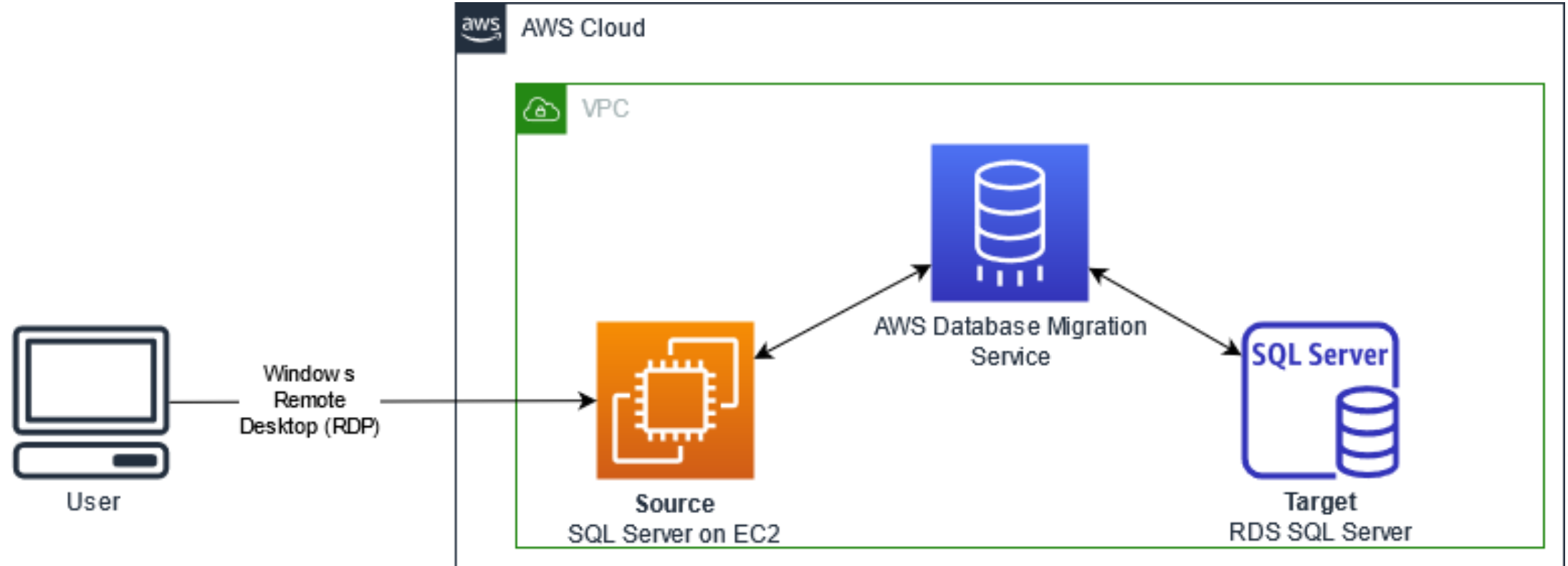
AWS DMS – Replication Types

- 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.

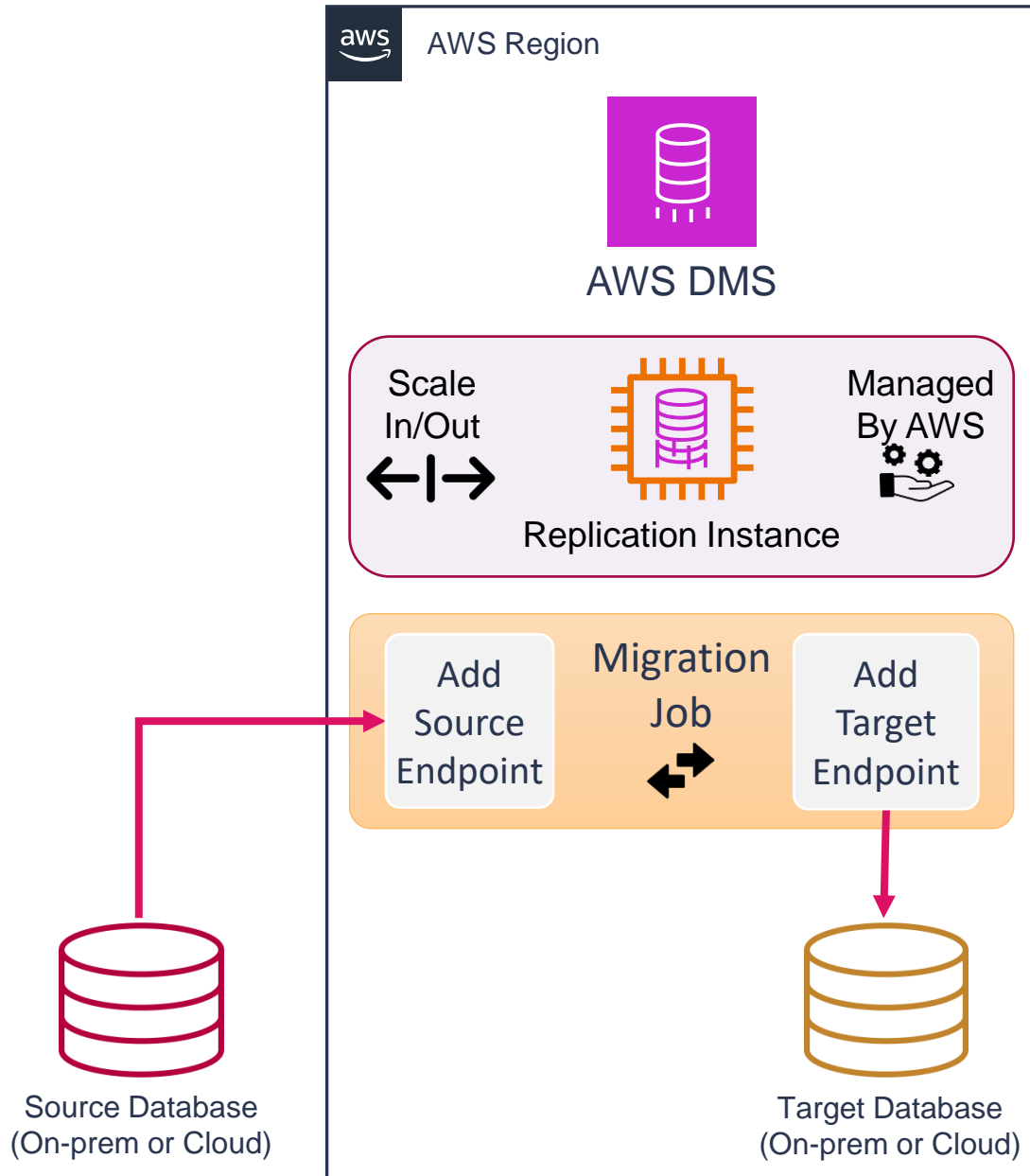


AWS Database Migration Workshop

- 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?

Assess



AWS Database Migration
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Mobilize



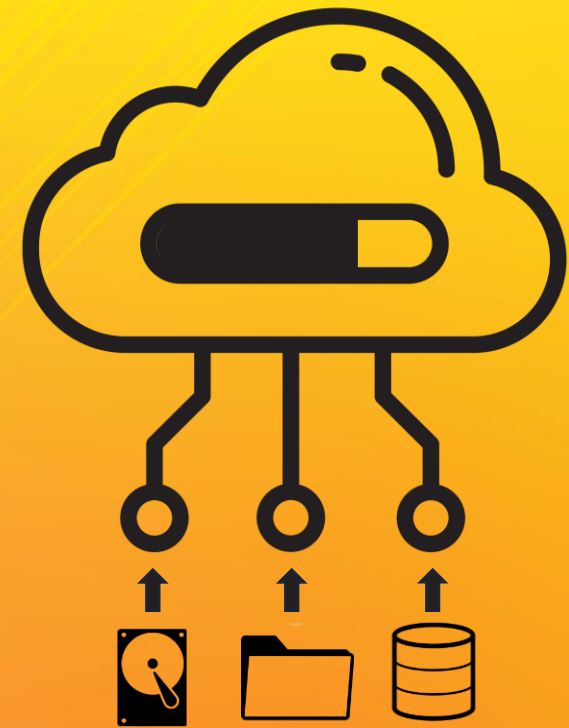
AWS Schema Conversion
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← Vendor and 3rd Party Tools & Services →



Data Migration

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Mobilize

Migrate and Modernize

Inventory

Business Case

Planning

Landing Zone

Workload Migration

Data Migration



AWS Migration Evaluator



AWS Systems Manager



Amazon CloudWatch



[Partner Only]

Migration Portfolio Assessment

Readiness

- CART
- MRA

[Partner Only]

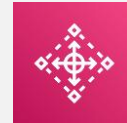
Deep Discovery



AWS Application Discovery Service



Migration Hub



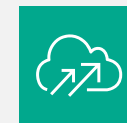
AWS Control Tower



AWS Service Catalog



VMware Cloud on AWS



AWS Application Migration Service



AWS Storage Gateway



AWS Transfer Family



AWS Database Migration Service (AWS DMS)



AWS DataSync



AWS Snow Family



Data Migration

Your Data Portfolio



File Systems – NFS / SMB / HDFS



Object Storage – Hitachi / IBM / Huawei etc.



Block Storage – SAN / Local Storage



Tape Drives – Vendor Specific / VTL



Other Cloud – Azure / Google



AWS Storage Services – S3 / EFS / FSX etc.

AWS Data Migration Services



AWS
DataSync



AWS
Storage Gateway



AWS
Transfer Family



AWS
Snow Family



AWS Storage Services



Amazon S3



Amazon EFS



Amazon FSx

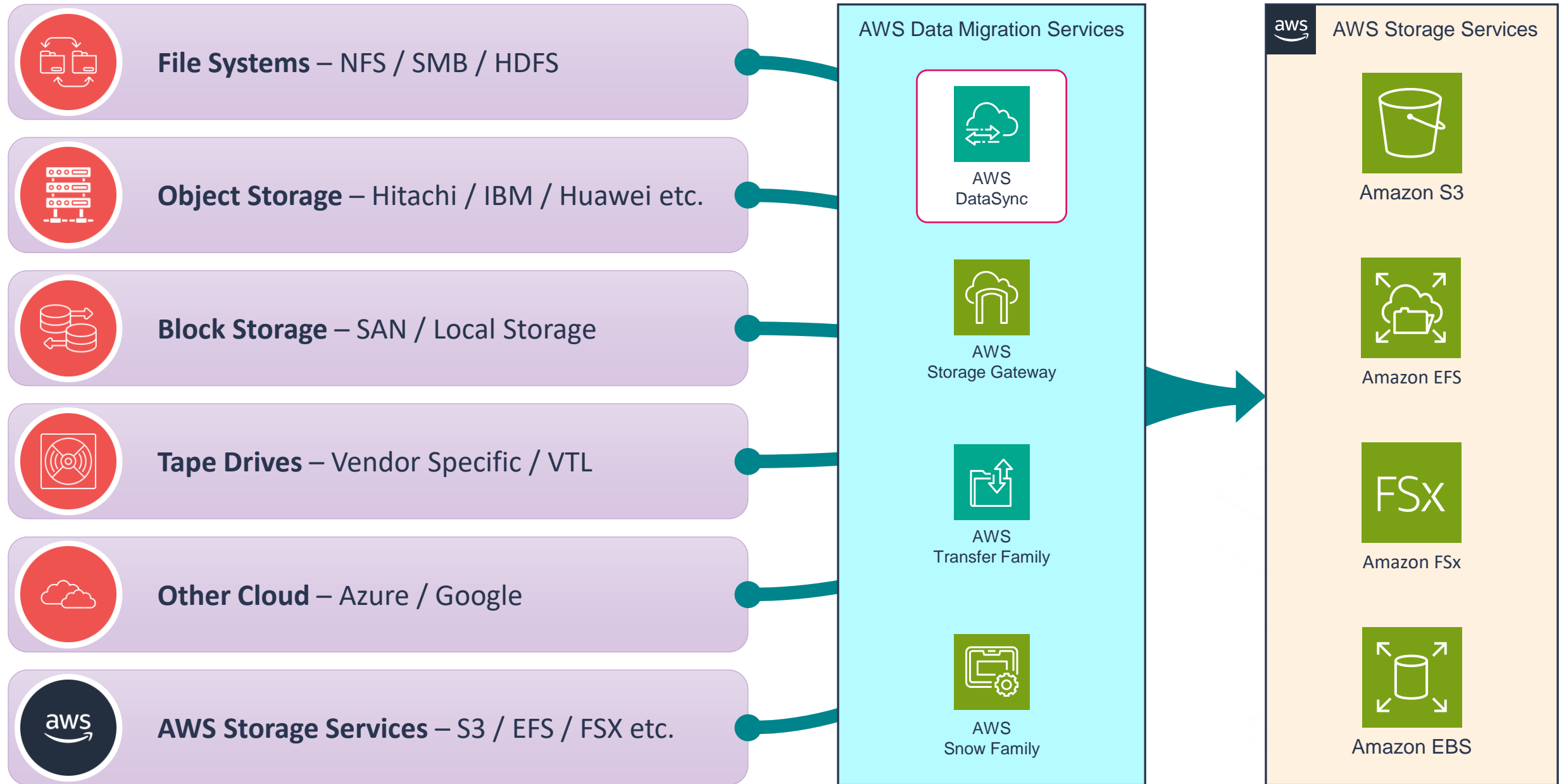


Amazon EBS

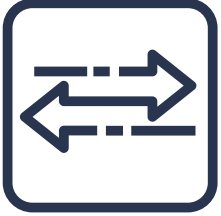


AWS DataSync

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)

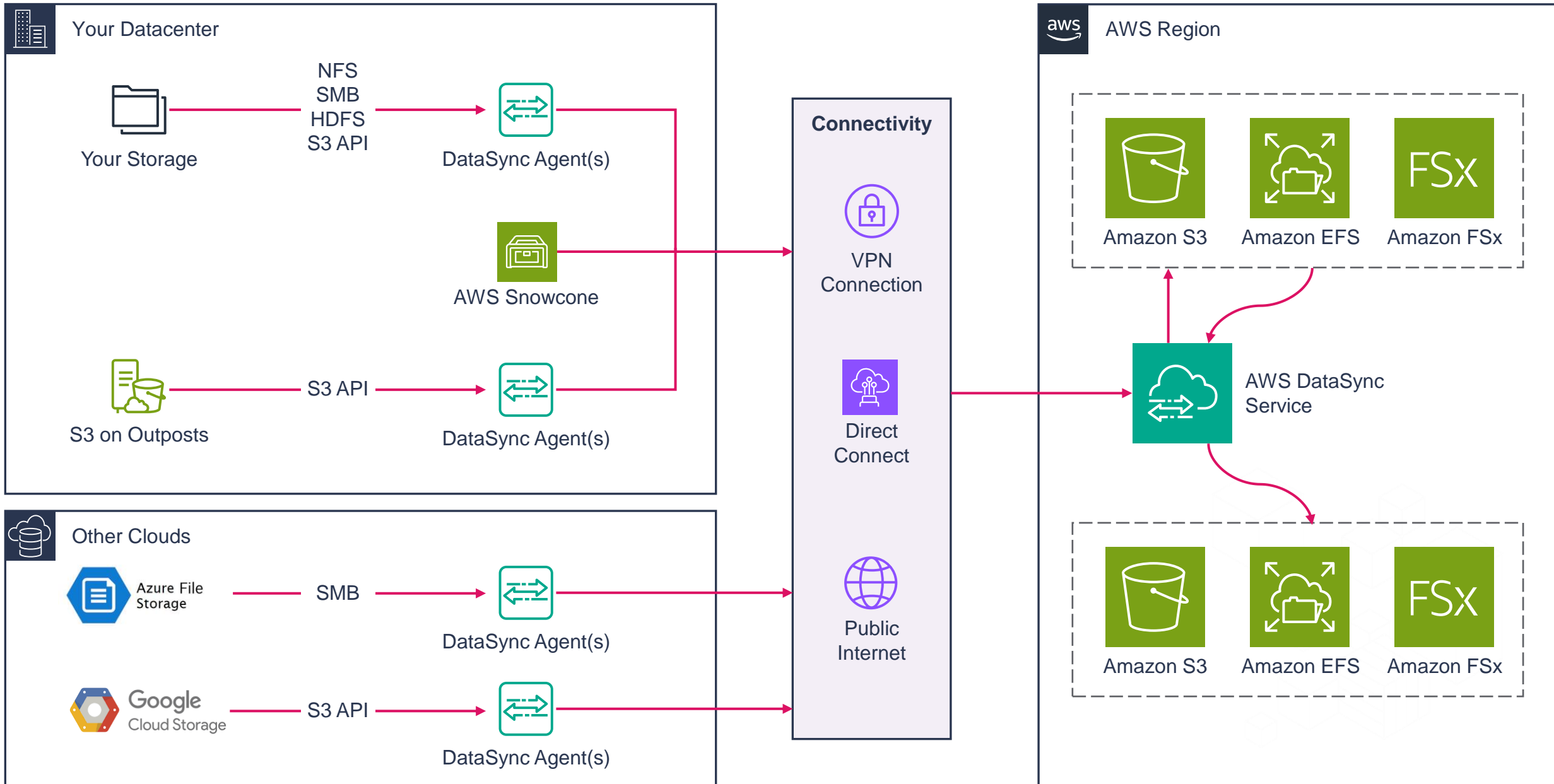
- Locations are endpoints for tasks, such as an on-premises file system or AWS storage service.
- NFS, SMB, HDFS, Object storage, Amazon EFS, Amazon FSx, Amazon S3

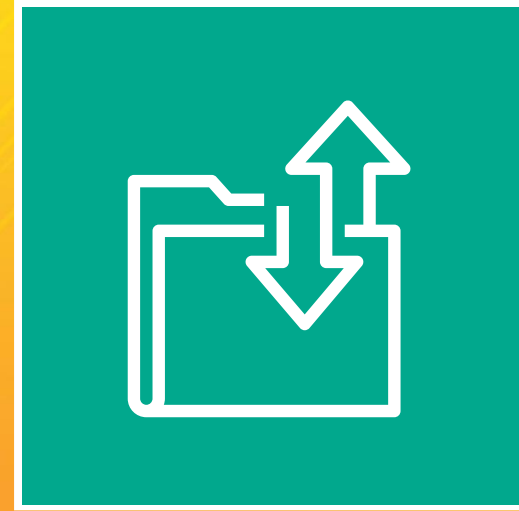


Tasks (Data migration job)

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

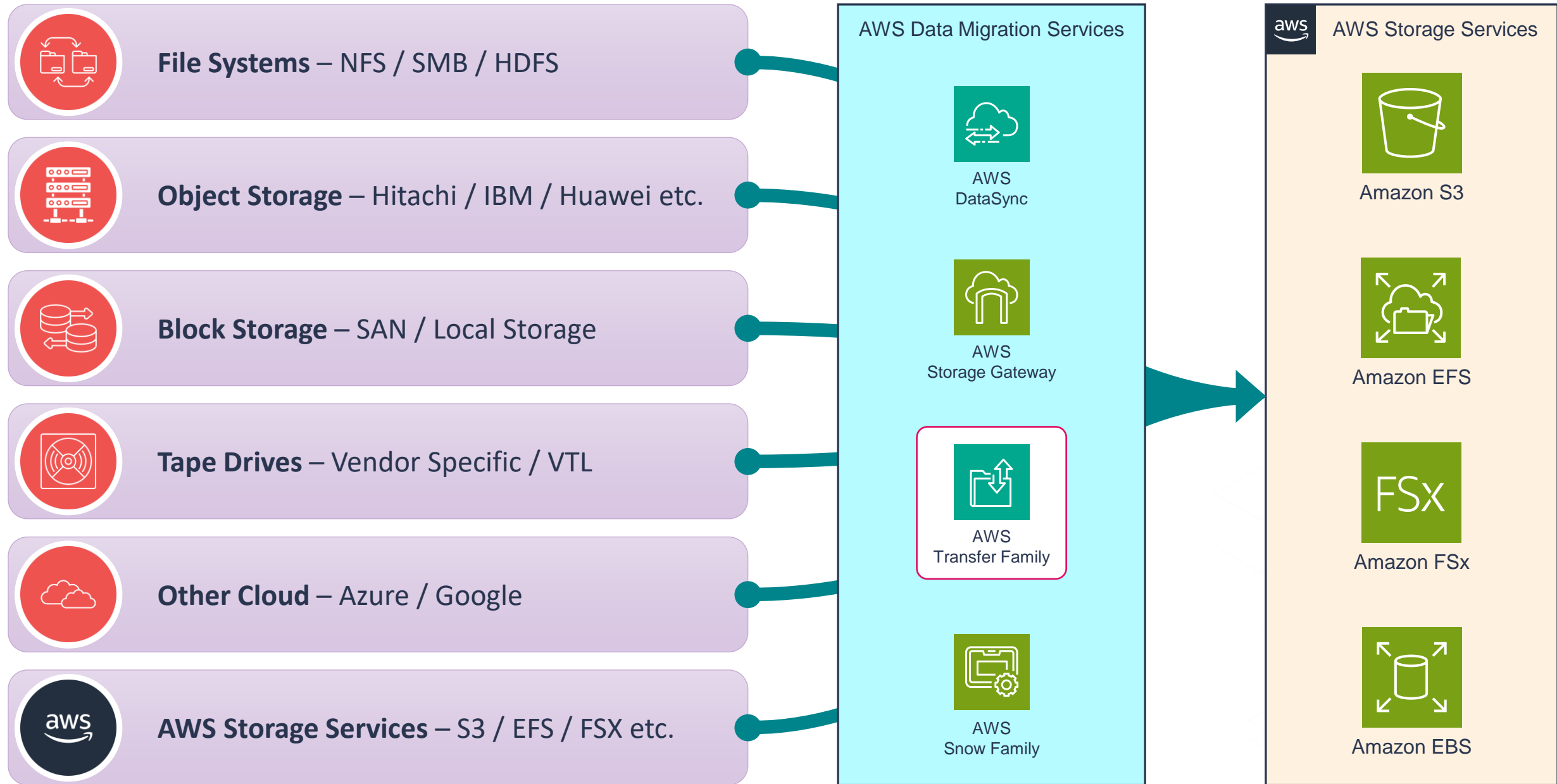
AWS DataSync Architecture





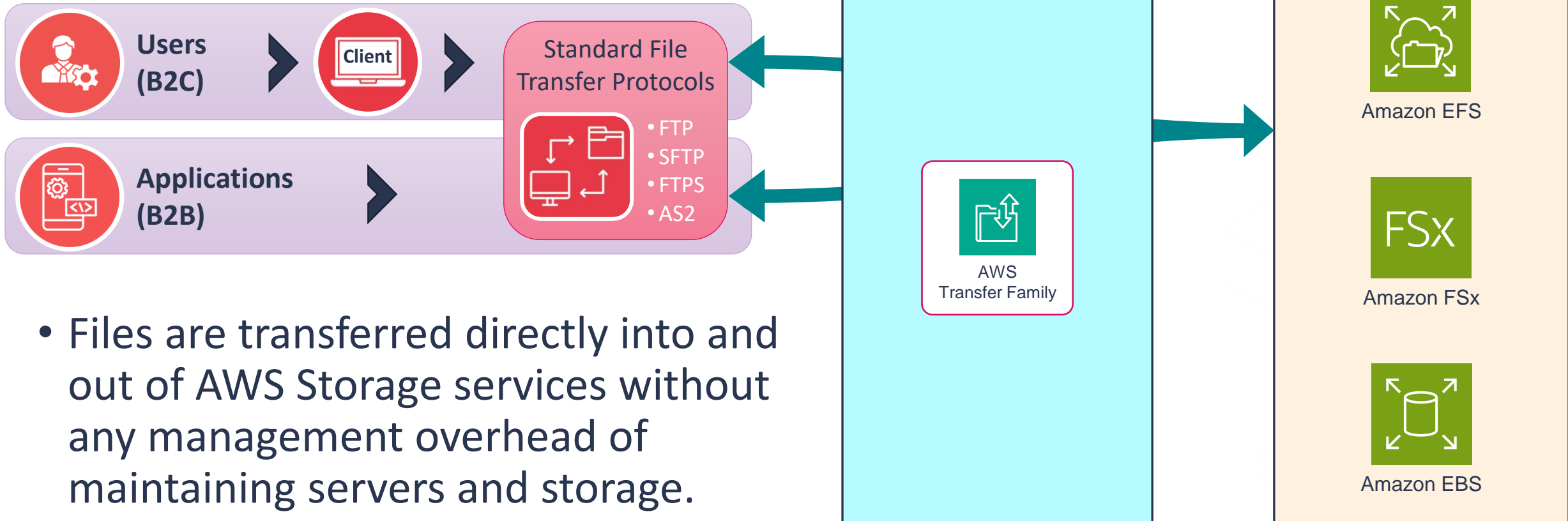
AWS Transfer Family

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



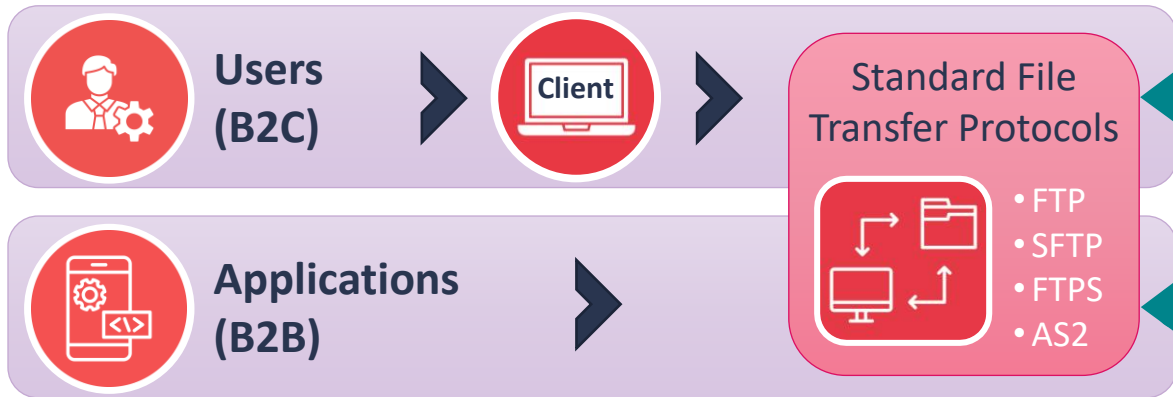
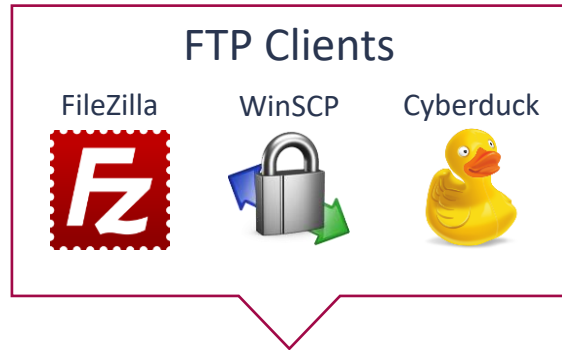
AWS Transfer Family – A cloud based Managed File Transfer (MFT)

- 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 Data Migration Services

Identity Providers

- Service Managed
- AWS Directory Service
- Custom Identity Provider



Amazon Route 53



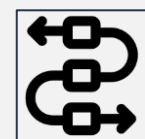
AWS IAM Role



AWS Storage Services



Amazon S3



Inbuilt Workflows

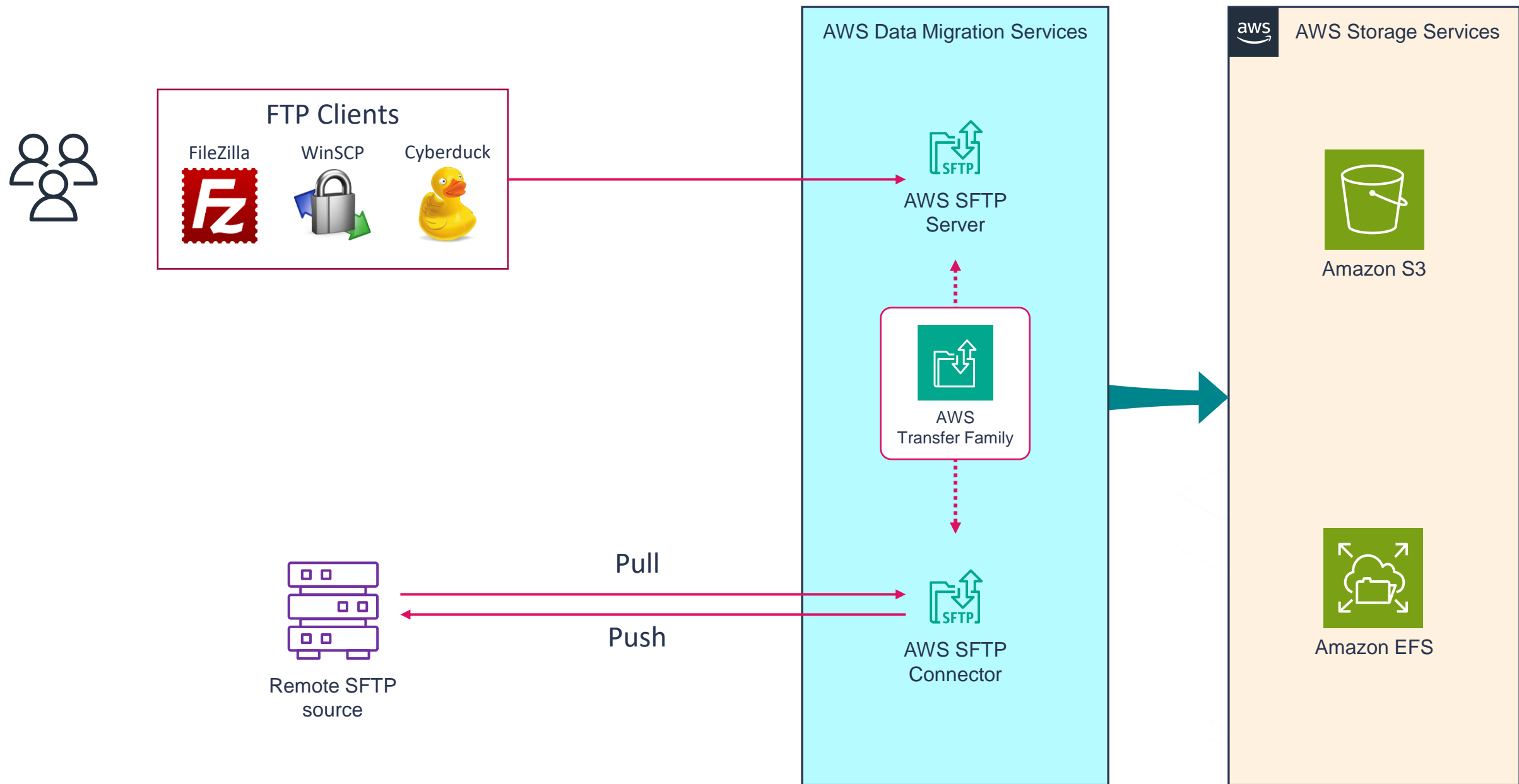


Custom Workflows



Amazon EFS

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





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-built for use outside of
a traditional data centre



AWS Snowball Edge

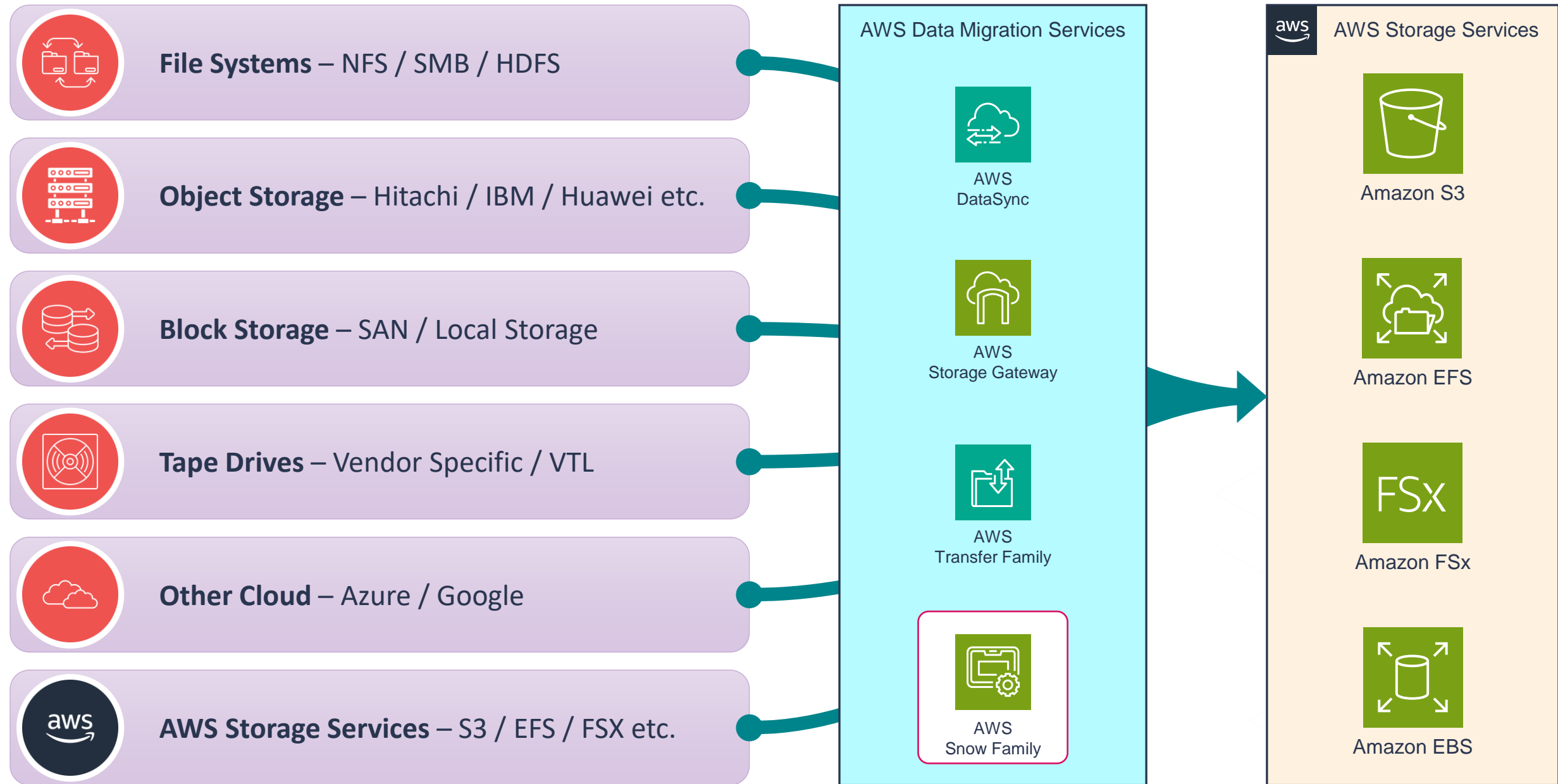


Compute-optimized or storage-
optimized device for use outside
a traditional data centre

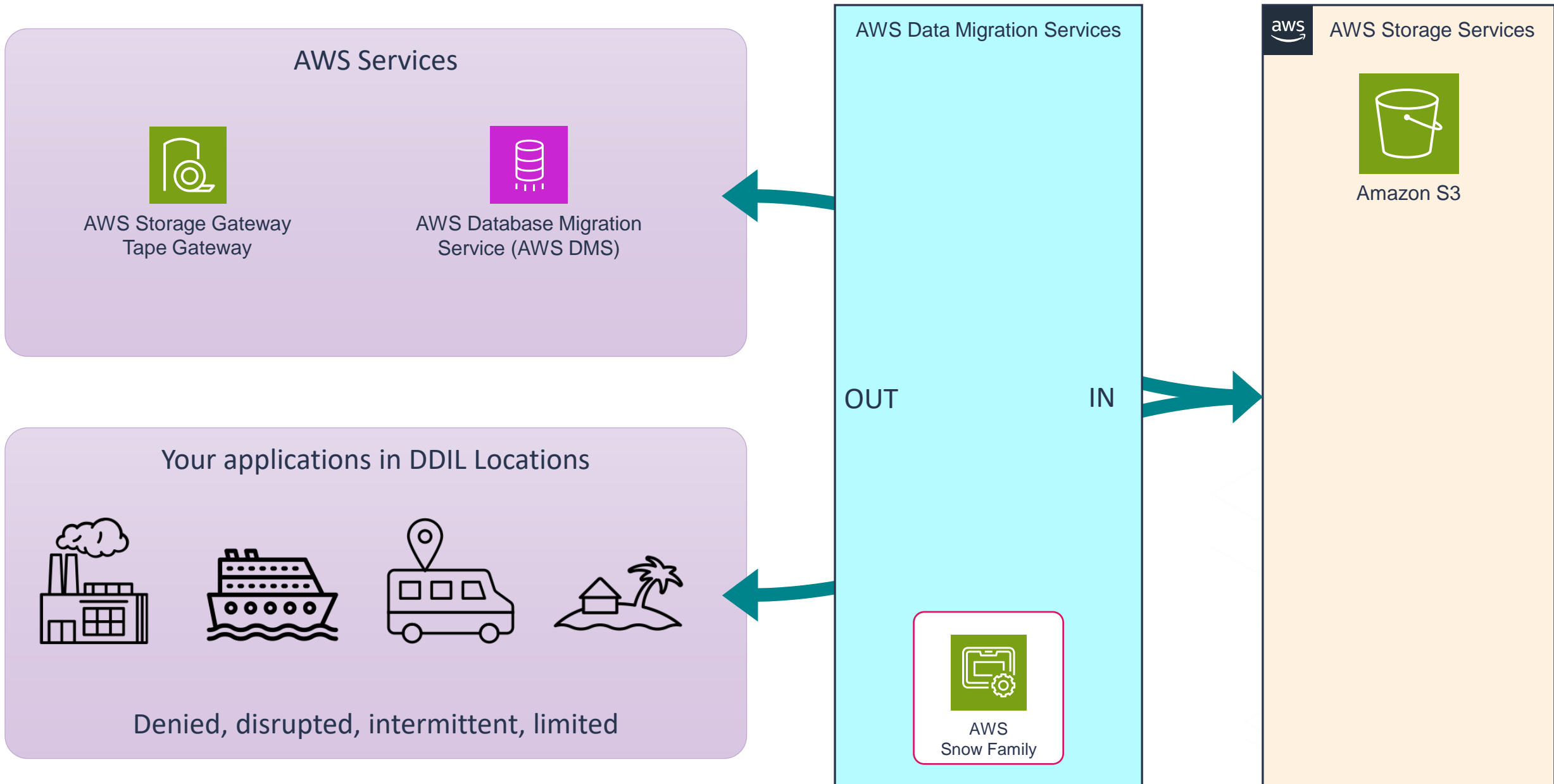
← Available for clustering, scaling, and connectivity →




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

 OpsHub


Dashboard

Devices


Services ▾

All devices ▾

Snowcone1 ▾

 Preferences


AWS OpsHub for Snow Family



Transfer data

Enable & start


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.



Sync data

Stop

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

Get started

Run pre-installed software on virtual servers (instances) locally on the device.



Transfer data

⊗ Inactive

[Configure manually](#)



Sync with cloud

⊙ Syncing

[Open DataSync Console](#) 



Compute

1 of 1

Instances running

Devices (1)

< 1 >

MySNC-10.111.60.176

10.111.60.176

4 GB Memory (RAM) available

80%

2 Available CPU

67%

