

Technical Architecture

Three independent replication streams operate within a shared Amazon Virtual Private Cloud (Amazon VPC), each landing on an AWS-managed target:

- **AWS DataSync** – transfers file and object data from Azure Blob Storage, Google Cloud Storage, Azure Files, and S3-compatible sources to Amazon S3, Amazon Elastic File System (Amazon EFS), or Amazon FSx with automatic encryption; Enhanced mode (May 2025) removes agent deployment requirements for object-to-S3 transfers.
- **AWS Application Migration Service (MGN)** – replicates Azure VMs and GCP server workloads to Amazon Elastic Block Store (Amazon EBS) staging volumes, converting to Amazon EC2 instances at a planned cutover.
- **AWS Database Migration Service (DMS)** – migrates Azure SQL Database, Azure SQL Managed Instance, and Google Cloud SQL to Amazon RDS or Amazon Aurora; DMS Serverless scales capacity automatically. Change Data Capture (CDC) is not available for Azure SQL Database – a planned downtime window is required for those workloads [DMS Azure SQL](#).

Networking defaults to encrypted public internet paths; private tunnel connectivity is available for traffic-isolation requirements. **Security** applies in-transit encryption across all three streams, encrypts all destination storage at rest by default, and stores source-cloud credentials in a managed secrets service. **Monitoring** delivers automatic task metrics, event-driven failure notifications, and a full API audit trail – no custom tooling required.

Key Considerations

Decision	Guidance
Which deployment tier fits your situation	Start with the base tier – one AWS account operational in under 30 minutes. Upgrade to AWS Control Tower multi-account isolation only at a concrete trigger: PCI DSS, ISO 27001, or SOC 2 compliance; data residency mandates; or per-account cost reporting. Most SMBs under 100 TB don't reach these thresholds during migration.
Where migration cost actually comes from	Source cloud egress – not AWS fees – dominates total migration cost, often exceeding DataSync transfer charges by 5-6× for a 50 TB migration DataSync Pricing . Azure and GCP offer free egress programs for customers fully exiting their platforms; enrolling before migration begins eliminates the largest cost component. AWS inbound data transfer is always free.
Planning your SQL database cutover	DMS does not support CDC for Azure SQL Database – full-load only, requiring planned application downtime. Azure SQL Managed Instance and Google Cloud SQL for PostgreSQL and MySQL support CDC for near-zero-downtime cutover. Confirm your source type before scheduling the maintenance window.
Which data transfer path fits your workload	Use Enhanced mode (no agent required) for Azure Blob Storage, Google Cloud Storage, and S3-compatible sources targeting Amazon S3. Use Basic mode with an agent VM in the source cloud for NFS/SMB file shares or when the destination is Amazon EFS or Amazon FSx.

Expected Outcomes

- **Move every file and object across without touching the source cloud** – files, blobs, and object stores migrate to AWS without installing or maintaining anything on the source side, and every byte is verified at both ends so there is no separate validation phase to budget for [AWS DataSync Features](#).
- **Keep applications running through the migration** – servers replicate to AWS continuously while the source stays live; teams test the migrated workload on AWS before flipping the switch, so cutover is a planned change in a maintenance window of minutes rather than a multi-day outage [AWS MGN](#).
- **Migrate databases with near-zero downtime** – relational databases move to managed AWS database services with the source online for the duration of the transfer where the engine supports

change data capture; database credentials are managed by AWS for the customer rather than handed around in scripts [AWS DMS](#).

- **Run data, server, and database migrations in parallel – not back-to-back** – the three workstreams are independent, so a delay or rerun on one does not hold up the other two; the architecture follows the same migration pattern AWS uses for enterprise engagements [AWS Well-Architected Migration Lens](#).
- **Eliminate the biggest line item before transfer starts** – source-cloud egress typically runs five to six times the cost of the AWS migration services on a 50 TB transfer; engaging Azure or GCP free-egress exit programs early, combined with always-free AWS inbound transfer and incremental syncs that move only changed bytes, removes the dominant cost [AWS DataSync Pricing](#).