

Service Name

AWS Database Migration Service

Service Overview

AWS Database Migration Service (AWS DMS) is a fully managed cloud service that enables migration of relational databases, data warehouses, NoSQL databases, and other data stores to AWS or between cloud and on-premises setups. AWS DMS simplifies the migration process by automating discovery of source data stores, schema conversion, and data migration. The service supports both one-time migrations and ongoing replication to keep sources and targets synchronized. AWS DMS handles deployment, monitoring, and scaling automatically, offering pay-as-you-go pricing, automatic failover, and secure data encryption both in transit and at rest using AWS KMS and SSL.

Key Use Cases

- Database modernization: Migrating from legacy databases to modern, cost-effective engines like Amazon Aurora or open-source databases
- Cloud migration: Moving on-premises databases to AWS managed services like Amazon RDS with minimal downtime
- Data warehouse migration: Migrating data warehouses to Amazon Redshift for analytics and reporting
- Disaster recovery: Setting up cross-region database replication for business continuity
- Database consolidation: Combining multiple databases into a single, more efficient database infrastructure
- Real-time data replication: Enabling continuous data synchronization between source and target databases for analytics

Features

- **DMS Fleet Advisor:** Automatically inventories on-premises database and analytic servers to build migration inventory
- **DMS Schema Conversion:** Automatically assesses and converts source schemas to target database engine format
- **Change Data Capture (CDC):** Replicates ongoing changes to keep sources and targets synchronized in real-time
- **Homogeneous Data Migrations:** Serverless migrations between same database engines with automatic resource scaling
- **Heterogeneous Migrations:** Supports migrations between different database engines with schema conversion

- **Automatic Failover:** Provides high availability with backup replication servers taking over seamlessly
- **Data Encryption:** Encrypts data at rest using AWS KMS and in transit using SSL/TLS
- **Multi-AZ Deployment:** Supports replication instances across multiple Availability Zones for high availability

Value Proposition

AWS Database Migration Service provides a fully managed, cost-effective solution that eliminates the complexity of traditional database migration. Customers benefit from automatic infrastructure management, eliminating the need for capacity planning, hardware procurement, and software installation:

- The service offers minimal downtime through continuous data replication, automatic failover capabilities, and enterprise-grade security with encryption
- AWS DMS supports both homogeneous and heterogeneous migrations with built-in schema conversion tools, making it versatile for various migration scenarios
- The pay-as-you-go pricing model ensures cost efficiency, while integration with other AWS services provides a comprehensive migration ecosystem

Service Integration

AWS DMS integrates seamlessly with Amazon RDS and Amazon Aurora as target databases, Amazon S3 for data storage and intermediate migration steps, and Amazon EC2 for hosting replication instances. The service works with AWS CloudFormation for infrastructure as code deployment, AWS Secrets Manager for secure credential storage, and AWS KMS for data encryption:

- Integration with Amazon CloudWatch provides monitoring and alerting capabilities, while Amazon SNS enables notifications
- AWS DMS also connects with AWS Schema Conversion Tool for schema migration, Amazon Redshift for data warehouse migrations, Amazon DynamoDB for NoSQL migrations, and Amazon Kinesis for real-time data streaming
- The service leverages AWS IAM for access control and integrates with AWS Backup for data protection strategies

Onboarding and Offboarding

Customers begin by setting up an AWS account and creating prerequisite resources including VPC, security groups, and target databases. The migration process involves creating a replication instance to host migration tasks, configuring source and target endpoints with connection details, and creating migration tasks specifying data transfer requirements:

- AWS provides comprehensive documentation, step-by-step migration guides, and the AWS DMS console for easy setup
- Customers can use DMS Fleet Advisor to discover source infrastructure and DMS Schema Conversion for schema assessment
- The service includes built-in data validation tools and monitoring capabilities
- AWS offers free tier access with 750 hours of dms.t3.micro instance usage monthly for the first year, enabling customers to test migrations before full implementation

Getting Started Guide:

https://docs.aws.amazon.com/dms/latest/userguide/CHAP_GettingStarted.html

Data Removal

Customers can remove data by deleting replication tasks, which stops ongoing data synchronization, followed by terminating replication instances and deleting associated EBS storage volumes. Target database data must be manually removed from destination systems like Amazon RDS or Amazon S3. AWS DMS provides cleanup procedures for removing endpoints, subnet groups, and certificates. Customers should also delete any DMS Fleet Advisor collectors and migration project resources. CloudFormation templates can automate resource cleanup if used for initial deployment.

Backup/Restore and Disaster Recovery

AWS Database Migration Service itself does not provide direct backup capabilities but enables disaster recovery scenarios through continuous data replication to secondary regions. DMS supports cross-region replication for disaster recovery setups, maintaining synchronized standby databases. The service integrates with AWS Backup for automated database snapshots and AWS Elastic Disaster Recovery for comprehensive DR solutions. Customers can use DMS for real-time data replication to maintain DR sites with minimal RPO and RTO objectives.

Backup Capabilities

AWS DMS does not have built-in backup capabilities and does not directly integrate with AWS Backup. However, target databases created through DMS migrations (such as Amazon RDS instances) can be backed up using AWS Backup or native database backup features. DMS focuses on data migration and replication rather than backup functionality, with backup responsibilities handled by the target database services.

Disaster Recovery

AWS DMS supports disaster recovery through continuous data replication capabilities but does not directly integrate with AWS Elastic Disaster Recovery. DMS enables cross-region database replication for DR scenarios, maintaining synchronized standby databases with minimal recovery point objectives. Organizations can use DMS as part of comprehensive

disaster recovery strategies by replicating data to DR sites and maintaining database synchronization across regions.

Recovery Objectives

AWS DMS helps customers achieve low RPO through continuous change data capture (CDC) that replicates data changes in near real-time, minimizing data loss potential. For RTO objectives, the service enables rapid failover scenarios through maintained synchronized replica databases. Cross-region replication capabilities support disaster recovery with recovery times dependent on failover processes rather than data restoration, enabling organizations to meet aggressive RPO and RTO requirements for business continuity.

Service Constraints

Service Quotas: https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Limits.html

FAQ: <https://aws.amazon.com/dms/faqs/>

Technical Requirements

Service Documentation:

<https://docs.aws.amazon.com/dms/latest/userguide/Welcome.html>

User Guide: <https://docs.aws.amazon.com/dms/latest/userguide/Welcome.html>

API Reference: <https://docs.aws.amazon.com/dms/latest/APIReference/Welcome.html>

Pricing Overview

Please see the AWS UK G Cloud 15 Pricing Document accompanying this service in the Digital Marketplace.

Public Pricing: <https://aws.amazon.com/dms/pricing/>

Cost Optimization

AWS DMS offers multiple cost optimization options including serverless capabilities that automatically scale based on workload demand, eliminating over-provisioning costs. Database Savings Plans provide up to 35% savings with one-year commitments:

- The service supports pay-as-you-go pricing for on-demand instances, allowing customers to pay only for migration duration
- Right-sizing replication instances based on actual throughput requirements optimizes costs
- Using parallel loading for large tables and optimized change processing reduces migration time and associated costs

- The AWS Free Tier includes 750 hours monthly of dms.t3.micro usage, enabling cost-effective testing and small migrations

Savings Considerations

Primary cost savings come from eliminating traditional migration infrastructure through fully managed service delivery, reducing hardware procurement and maintenance costs. Automated capacity management and scaling eliminate over-provisioning expenses:

- Minimal downtime capabilities reduce business disruption costs compared to traditional migration approaches
- Database engine modernization enabled by DMS can result in long-term licensing cost reductions by migrating to open-source or AWS-native database services
- Efficient migration tools and automation reduce project timelines and associated labor costs
- Integration with other AWS services creates economies of scale and simplified billing management