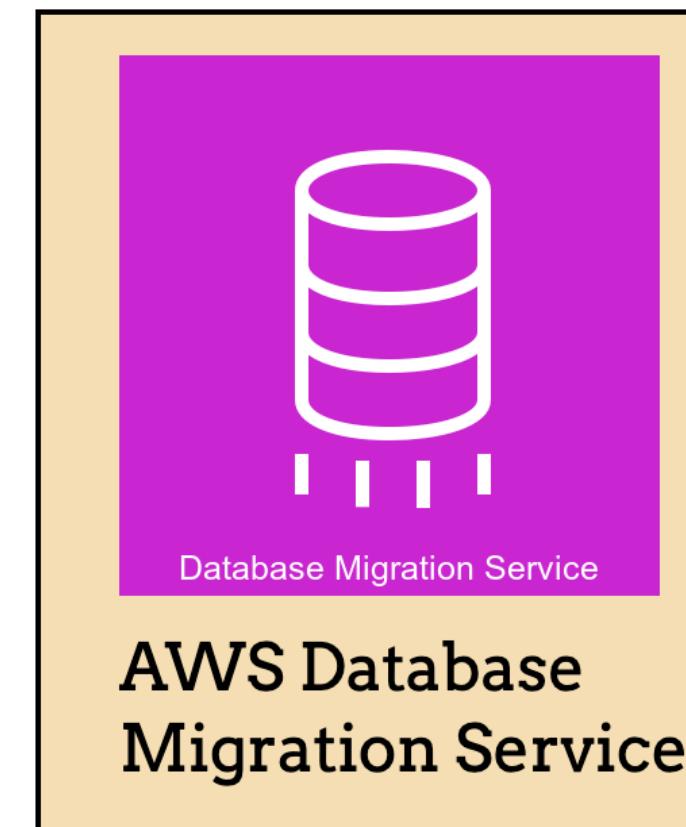


AWS Database Migration Service

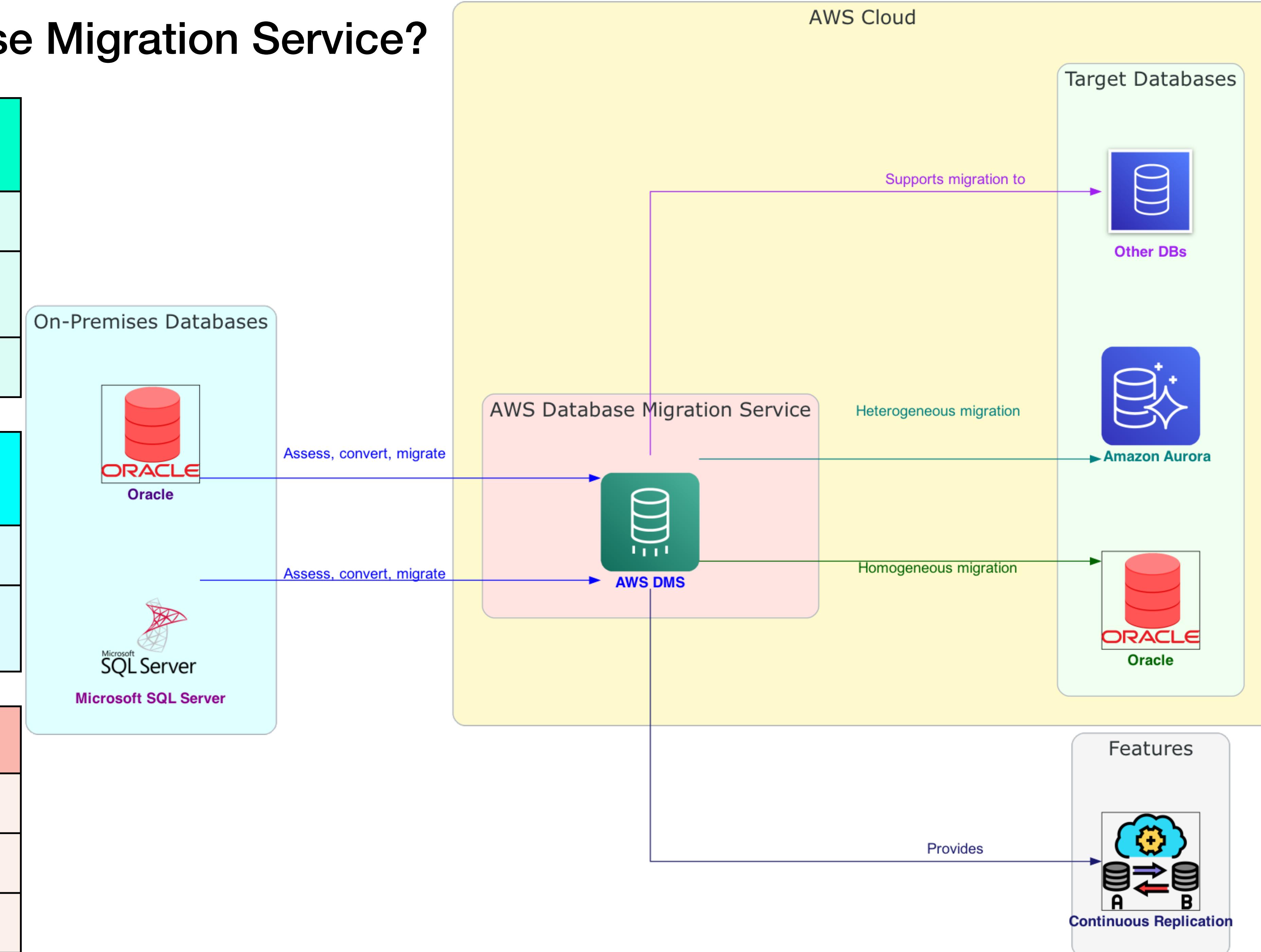
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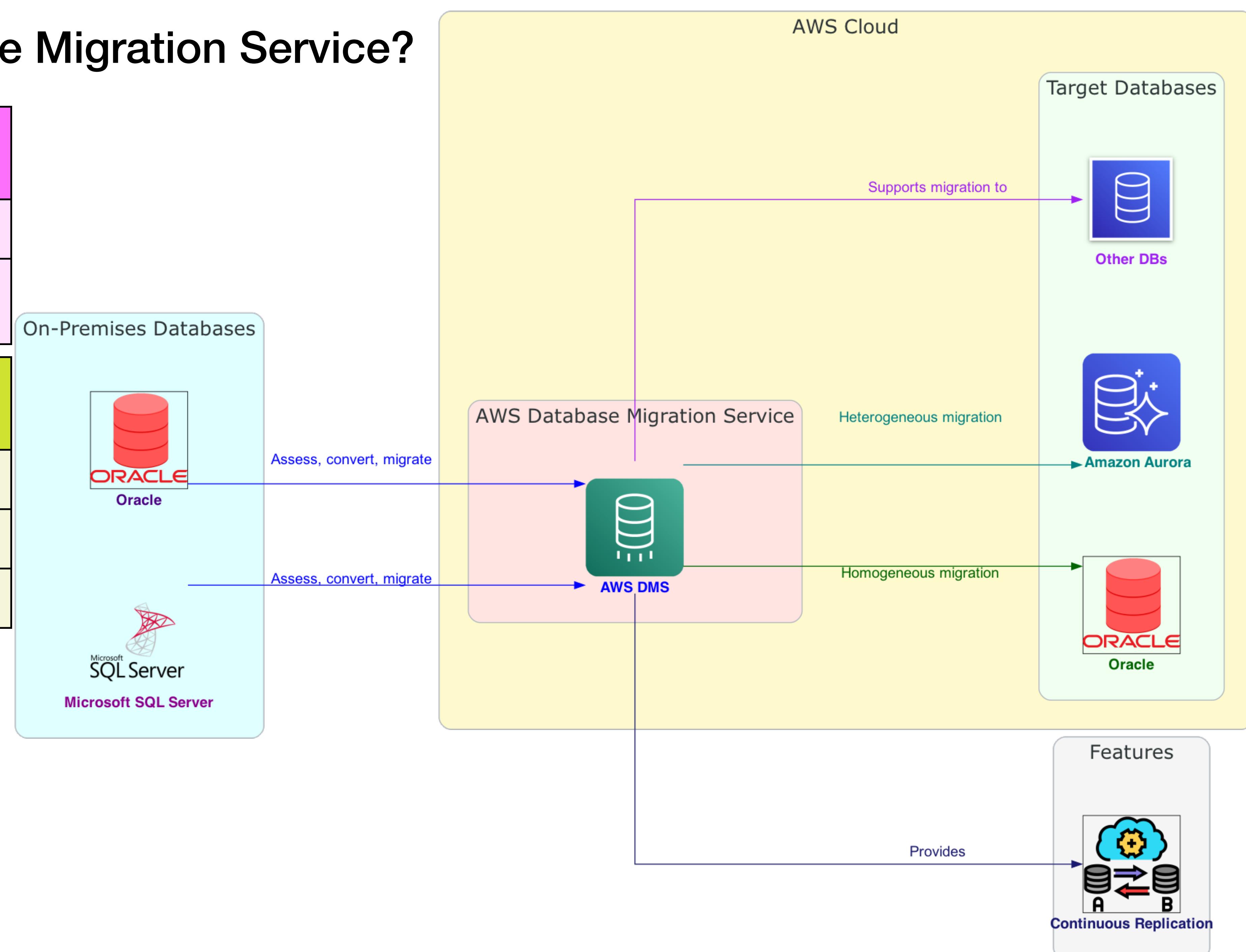
What is AWS Database Migration Service?

1. Managed migration and replication service
Fully managed service
Simplifies migrating, replicating databases
Quick and secure transition
2. Minimal downtime during migration
Source database remains operational
Minimizes downtime for dependent apps
3. Assess, convert, and migrate data
Assesses existing databases
Converts data if needed
Migrates to/from popular databases

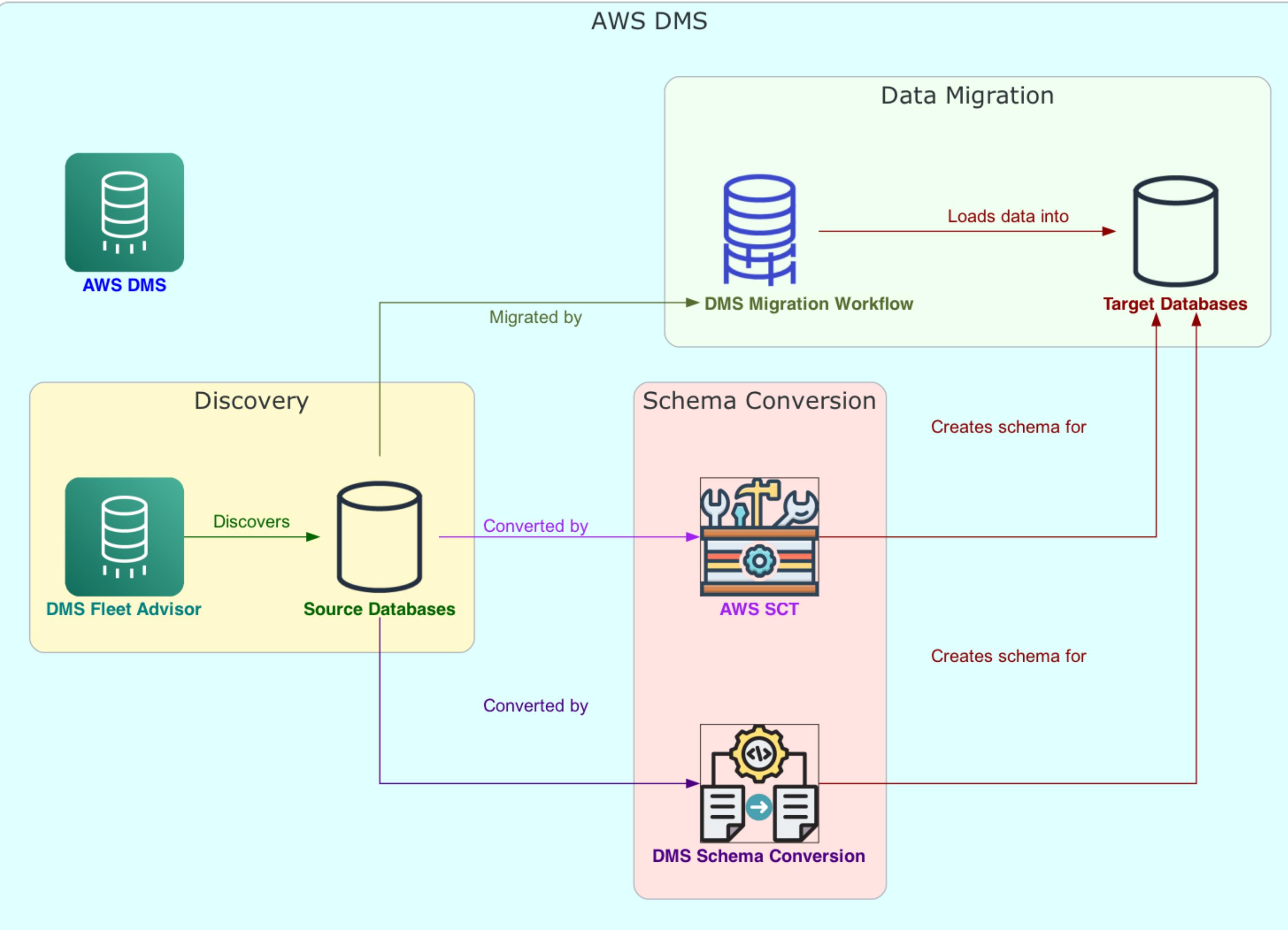


What is AWS Database Migration Service?

4. 🤝 Supports homogeneous and heterogeneous migrations
⟳ Homogeneous (e.g., Oracle to Oracle)
⇄ Heterogeneous (e.g., SQL Server to Aurora)
5. ⏱ Continuous data replication with low latency
⟳ Set up continuous replication
⚡ Low latency
🆕 Up-to-date target database



🚀 Simplifying Data Migration with AWS DMS



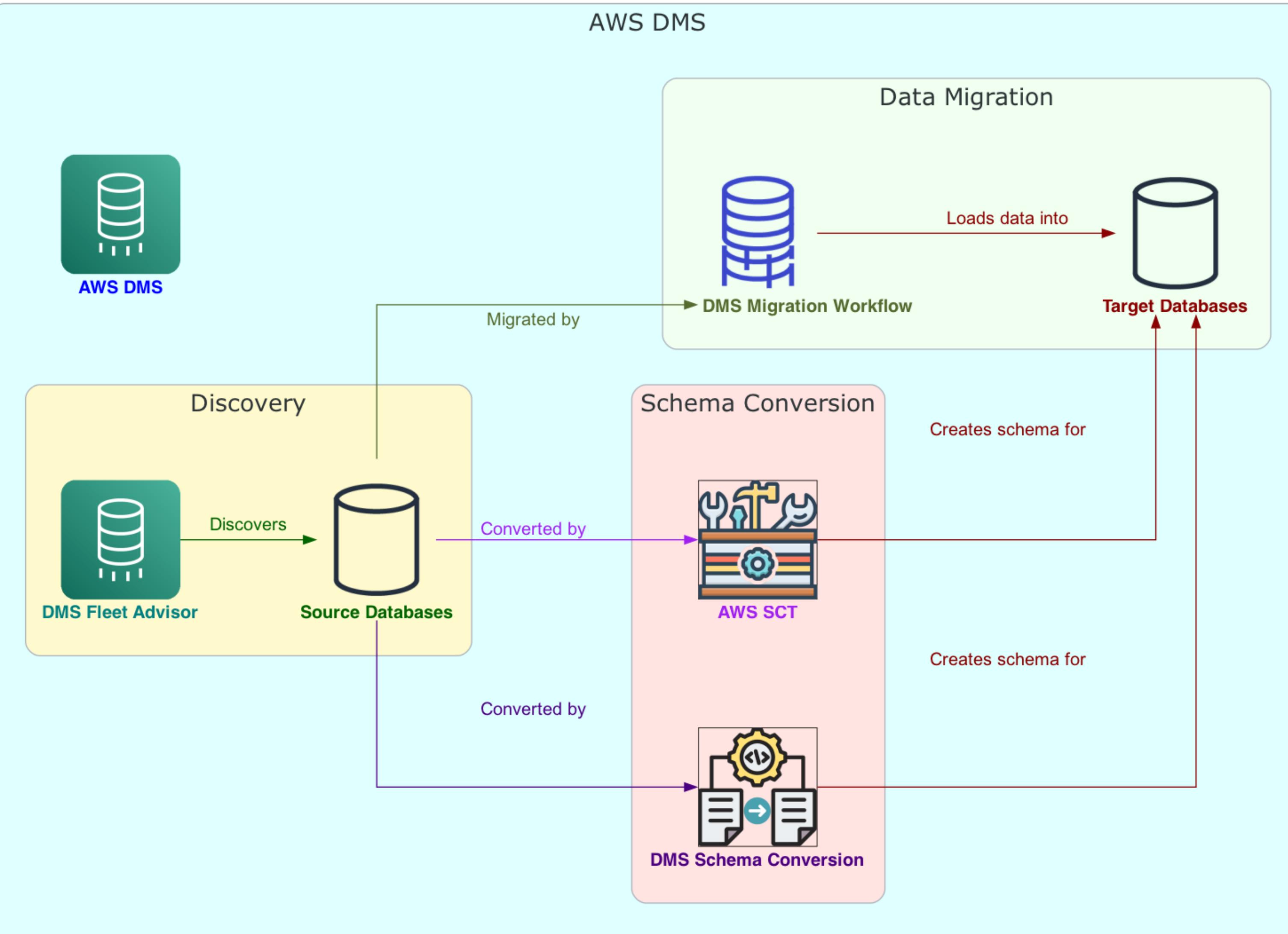
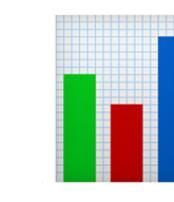
1. 🔎 Discover source data stores
First step in migration process

2. 🔍 Convert source schemas
Ensures smooth transition
Compatible with target database engine

3. 📈 Migrate data seamlessly
Source to target databases
Simplifies overall migration process

4. 📊 DMS Fleet Advisor: Inventory servers, databases, and schemas
Collects data from on-premises servers
For migration to AWS Cloud

🚀 Simplifying Data Migration with AWS DMS



5. 🚀 DMS Schema Conversion: Assess and convert source schemas

🔍 Automatically assesses source schemas

🔄 Converts to new target engine

🏎️ Streamlines schema conversion process

7. ✅ One-time or ongoing data replication

⌚ Supports one-time migrations

🔄 Ongoing replication for sync

🎨 Caters to various migration needs

6. ⚙️ AWS Schema Conversion Tool (SCT) for local schema conversion

💻 Download to local PC

🔧 Alternative to DMS Schema Conversion service

8. ☁️ Cost-efficient, secure, and flexible AWS Cloud solution

💰 Cost efficiency

🚀 Speed to market

🔒 Security

↳ Flexibility

⭐️ Enhances overall data migration experience

Tasks involved in a migration project

1. Automates tedious tasks

Capacity analysis

Hardware & software procurement

Installation & administration

Testing & debugging

5. Automatic failover

Backup server takes over

Little to no service interruption

9. Broad source support

Most popular DBMS engines

2. Scalable resources

Scale up or down as needed

Easily adjust storage

6. DMS Fleet Advisor

Inventories data infrastructure

Identifies migration candidates

Helps plan migration

10. Wide target coverage

Variety of target engines

11. Fully heterogeneous migrations

Any supported source to target

3. Pay-as-you-go model

Only pay for resources used

No upfront or ongoing costs

7. DMS Schema Conversion

Assesses migration complexity

Converts schemas & code objects

Applies converted code to target

12. Secure data migration

Data at rest encryption (AWS KMS)

In-flight encryption (SSL)

4. Managed infrastructure

Hardware & software

Software patching

Error reporting

8. Modernize databases

Cost-effective options (RDS, Aurora)

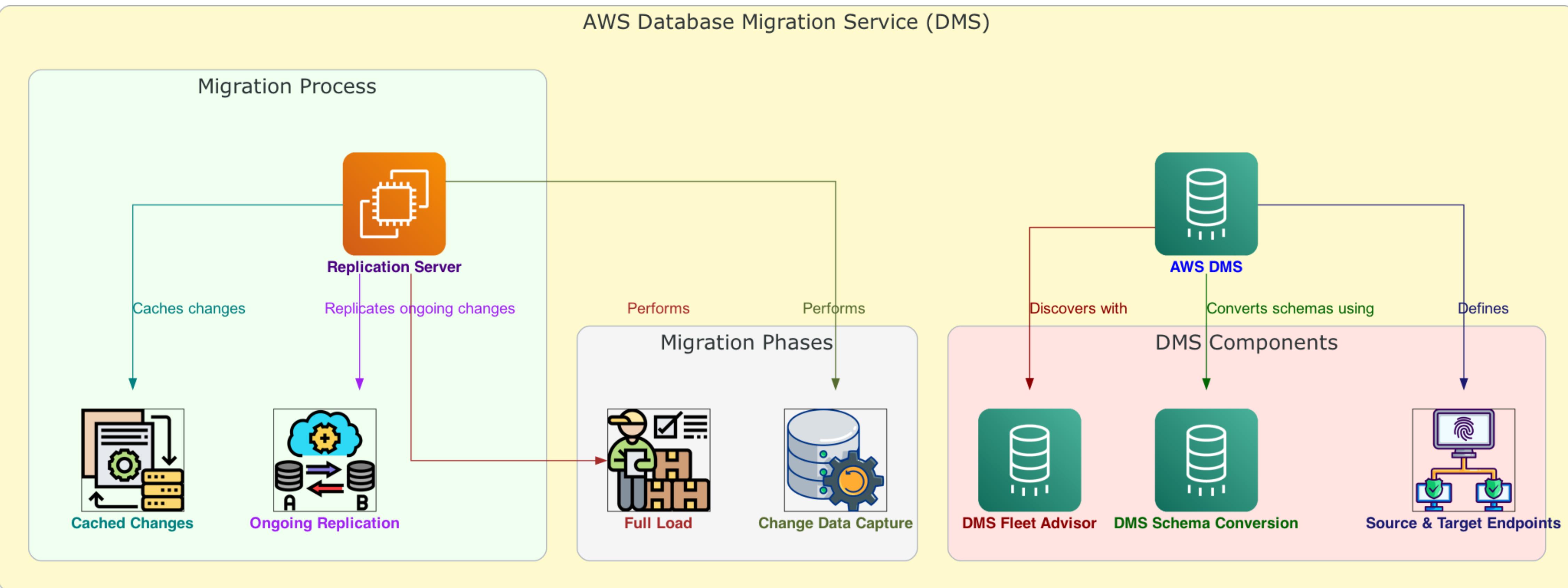
Data warehousing (Redshift)

NoSQL (DynamoDB)

Low-cost storage (S3)



High-Level Overview of AWS Database Migration Service (DMS)



1. Connects to source data store, reads and formats data

Performs migration

Reads source data

Formats for target data store

2. Loads data into target data store

After formatting data

3. Most processing happens in memory

Optimal performance

4. Large transactions may require disk buffering

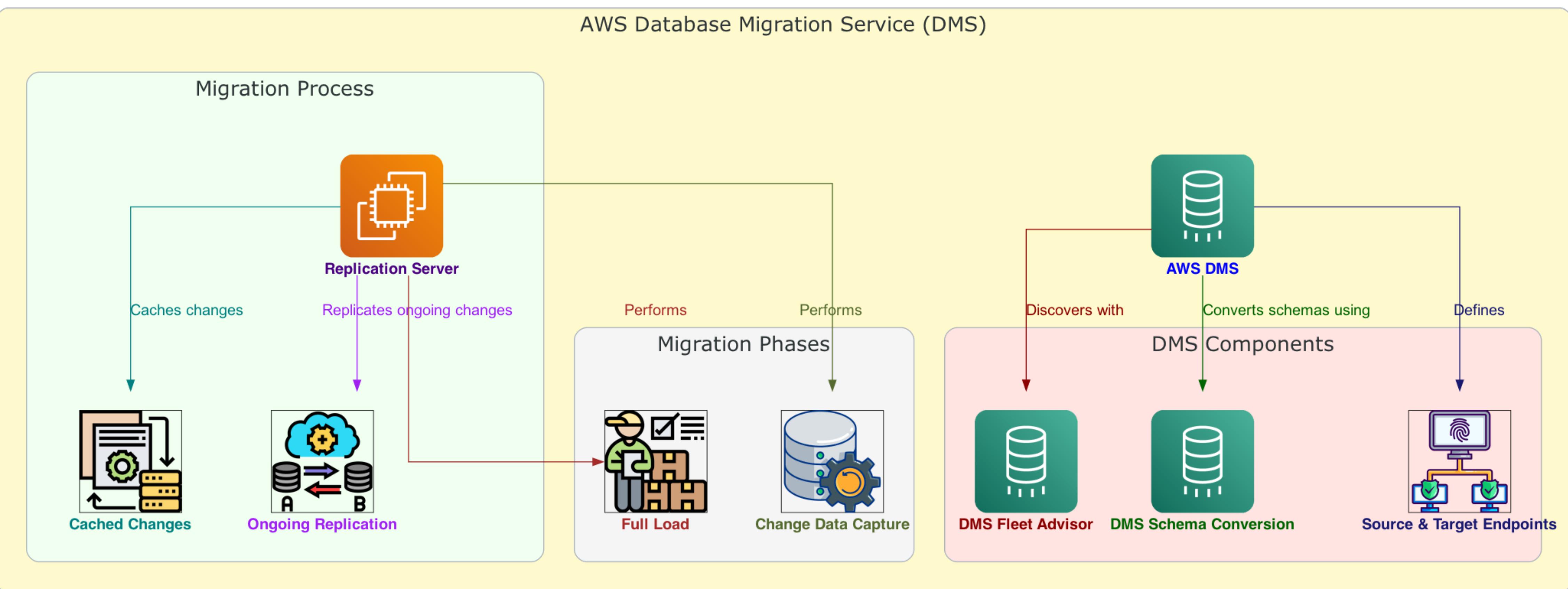
For large transactions

5. Cached transactions and log files written to disk

During migration process

For persistence and reliability

Key Steps in Using AWS DMS



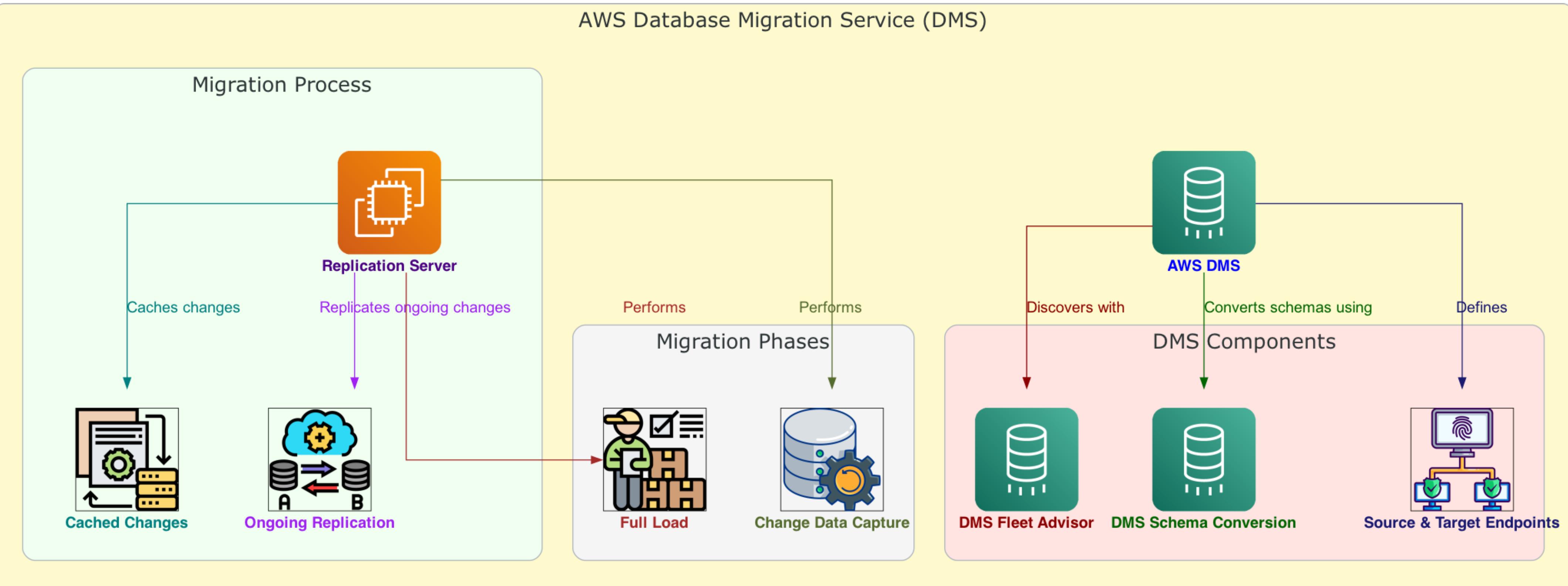
1. Discover databases suitable for migration
 - Identify in network environment
 - Good candidates for AWS migration
2. Automatically convert source schemas and code objects
 - Convert to target database format
 - Schemas and most code objects
3. Create a replication server
 - Facilitate migration
 - Set up in AWS DMS
4. Create source and target endpoints
 - Contain connection information
 - For source and target data stores
5. Create migration tasks to move data
 - Set up in AWS DMS
 - Migrate between source and target



Three Major Phases of an AWS DMS Migration Task



AWS Database Migration Service (DMS)



1. 📦 Full Load: Migration of existing data

🚚 Moves data from source to target

📊 Loads tables from source to target

2. ⏱ Cached Changes: Application of cached changes

💾 Changes cached during full load

⌚ Applied after full load completes

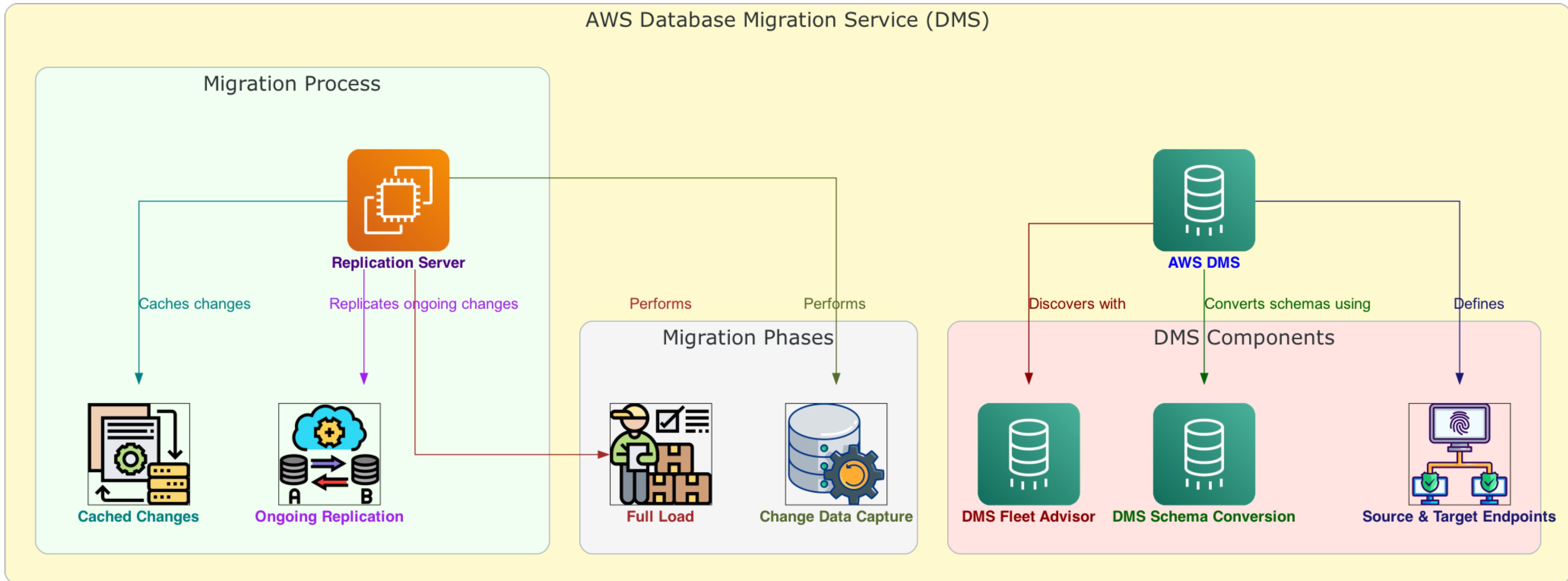
3. 🔍 Change Data Capture (CDC): Ongoing replication

🔁 Collects changes after full load and cached changes

🐌 Initial lag due to transaction backlog

🎯 Eventually reaches steady state

🎯 Approaches to Target Schema Creation in AWS DMS 🚧



1. ⚙️ Minimalist approach:
Create only necessary objects



Primary keys

Some unique indexes

🚫 Other objects not created

2. 🔐 DMS Schema Conversion: Automatically convert schemas and code objects

🧵 Tables, views, stored procedures, functions, data types, synonyms, etc.

🔄 Convert to target database format

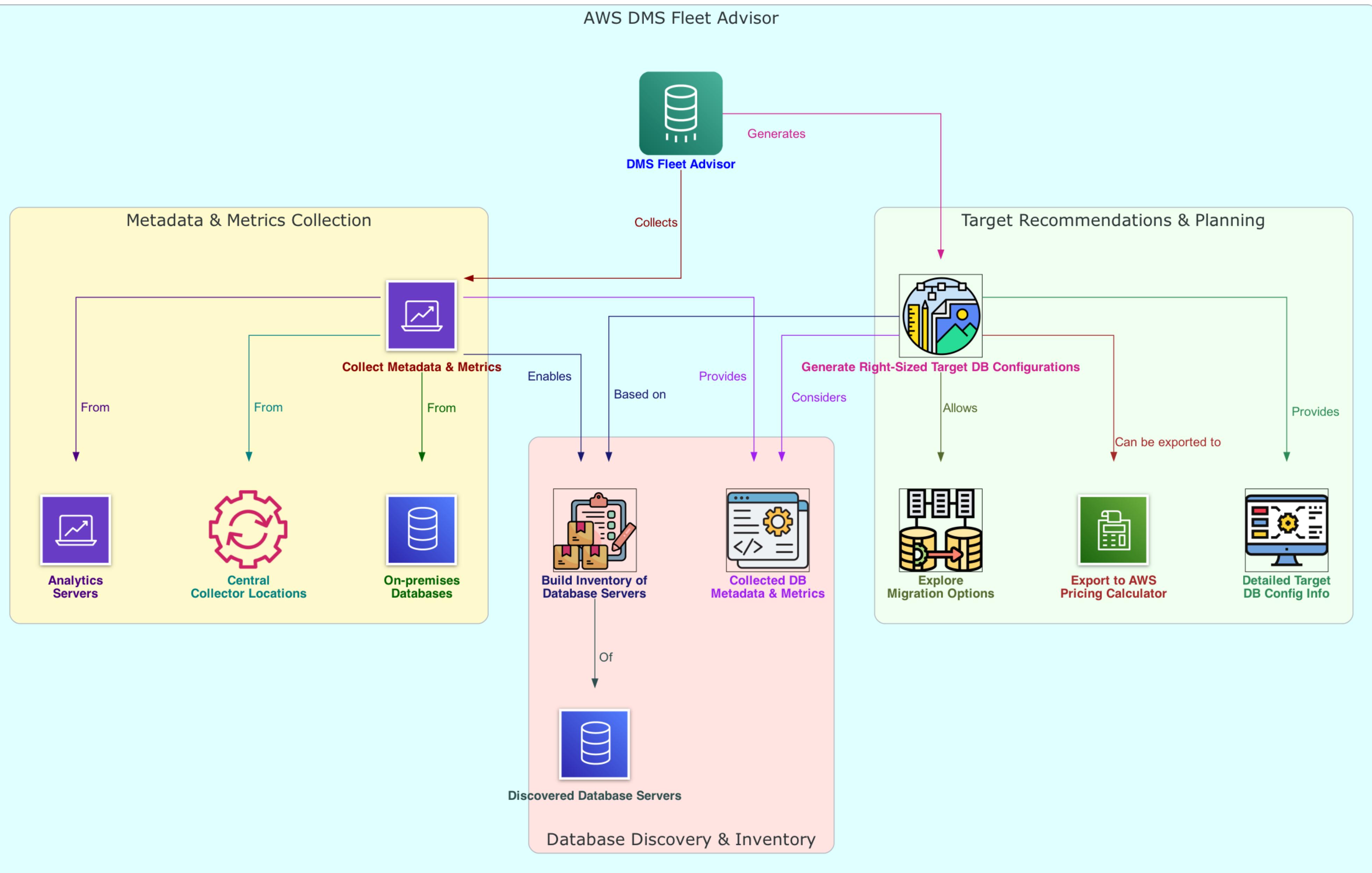
3. 👍 Manual conversion for unsupported objects

❗ Objects not automatically converted

✍ Convert manually

🎯 Complete migration

DMS Fleet Advisor Detailed



1. Collect metadata and metrics from multiple database environments

Gather insights into data infrastructure

From various database environments

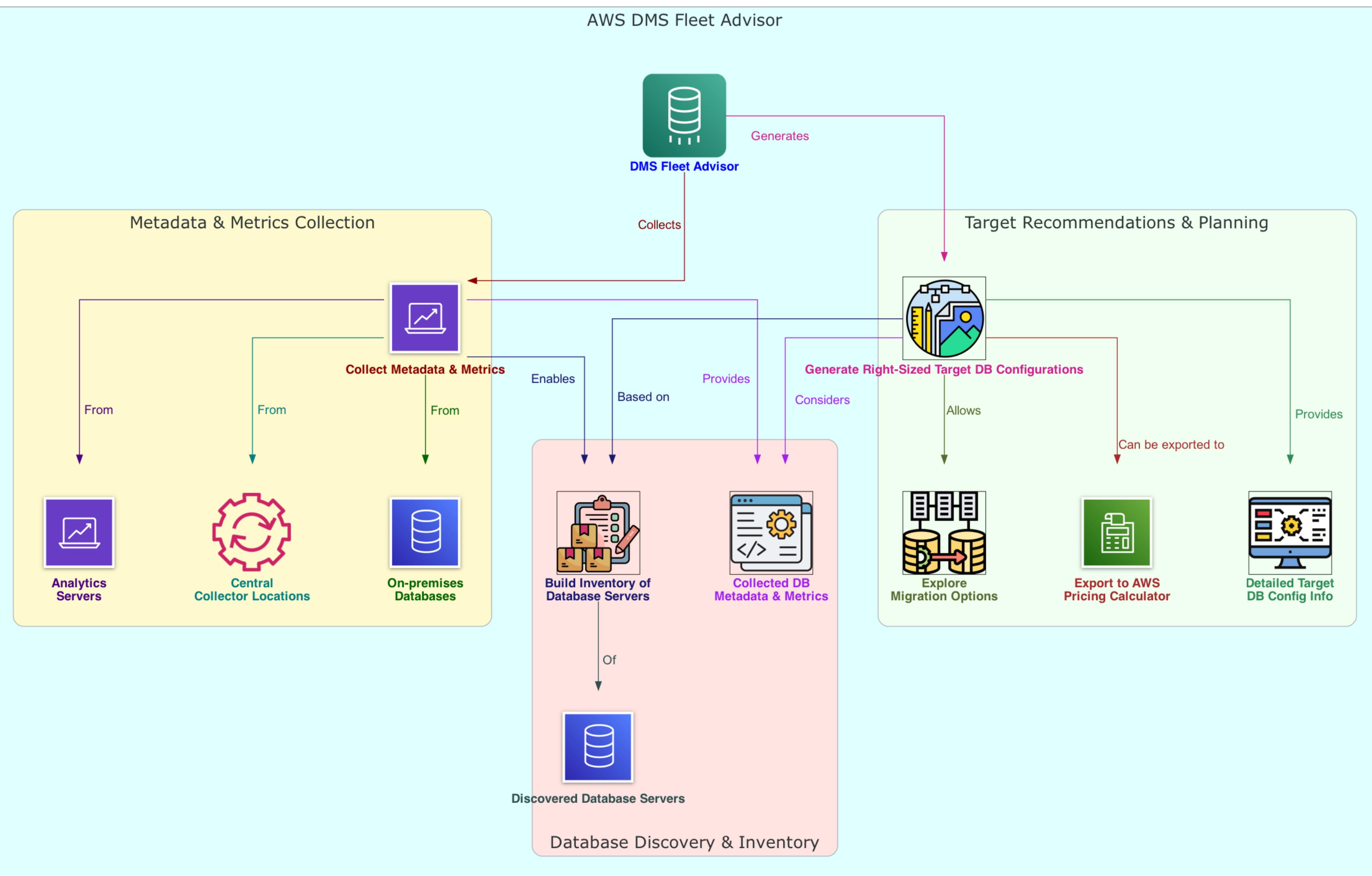
2. Centralized collection without individual installations

Collects from on-premises database and analytic servers

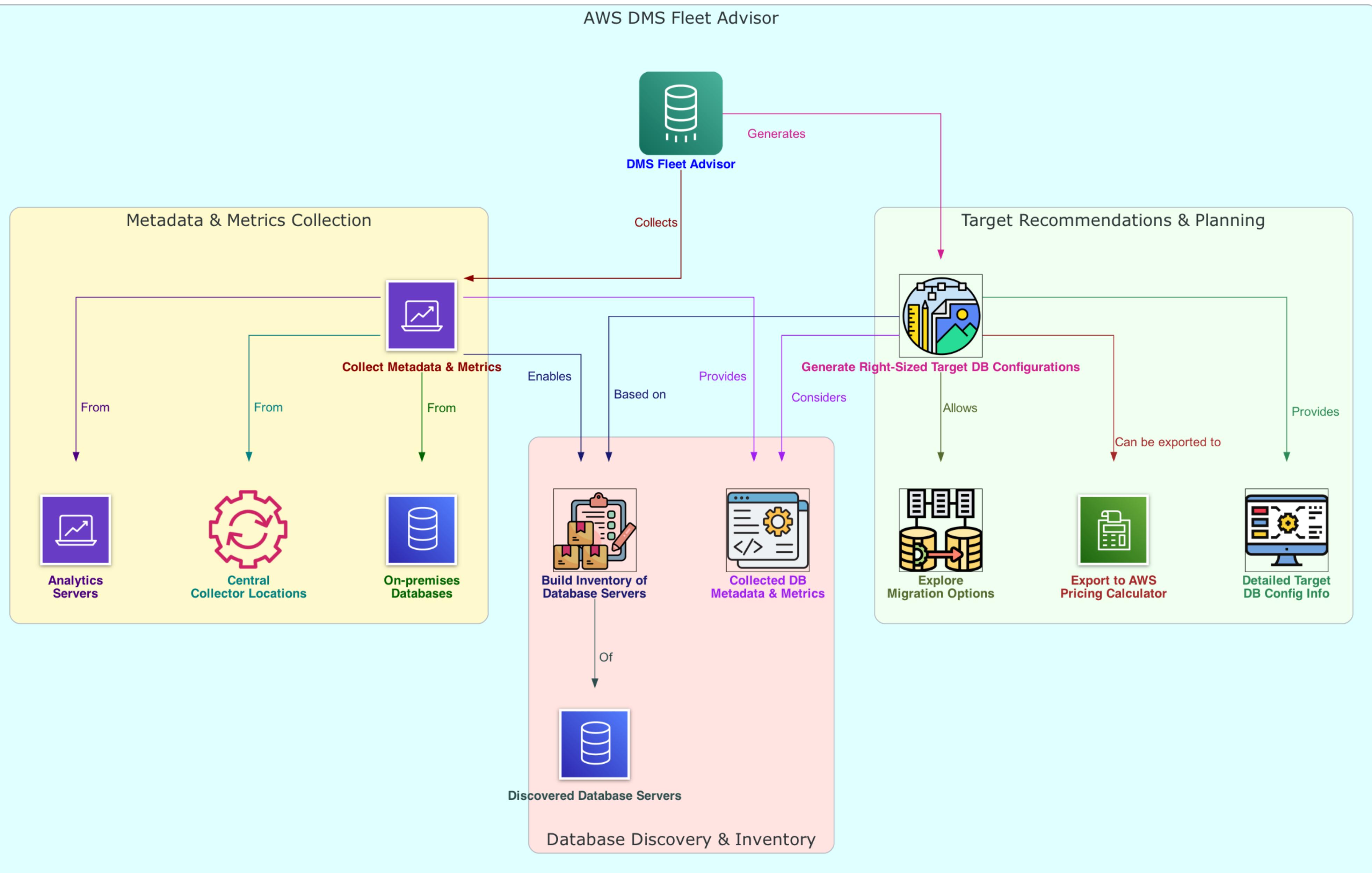
From one or more central locations

No need to install on every computer

DMS Fleet Advisor Detailed



DMS Fleet Advisor Detailed



5. 🛠️ Analyze migration feasibility based on collected data

After collecting information about servers, databases, schemas

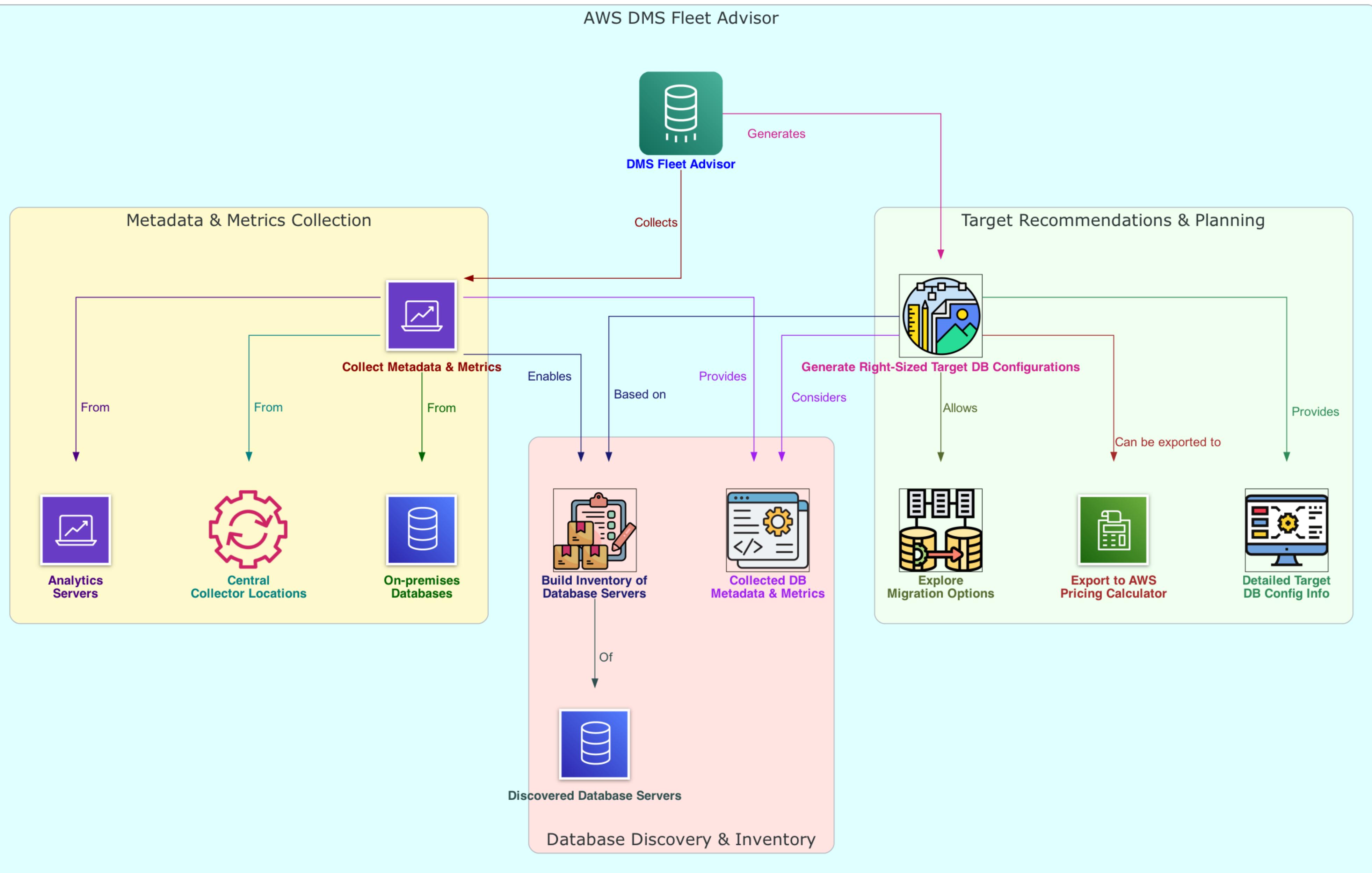
Analyze feasibility of intended migrations

6. ⚙️ Generate right-sized target recommendations

For databases planned for migration to AWS Cloud

Based on collected metrics and preferred settings

DMS Fleet Advisor Detailed



7. View detailed target database configuration information

Once recommendations are generated

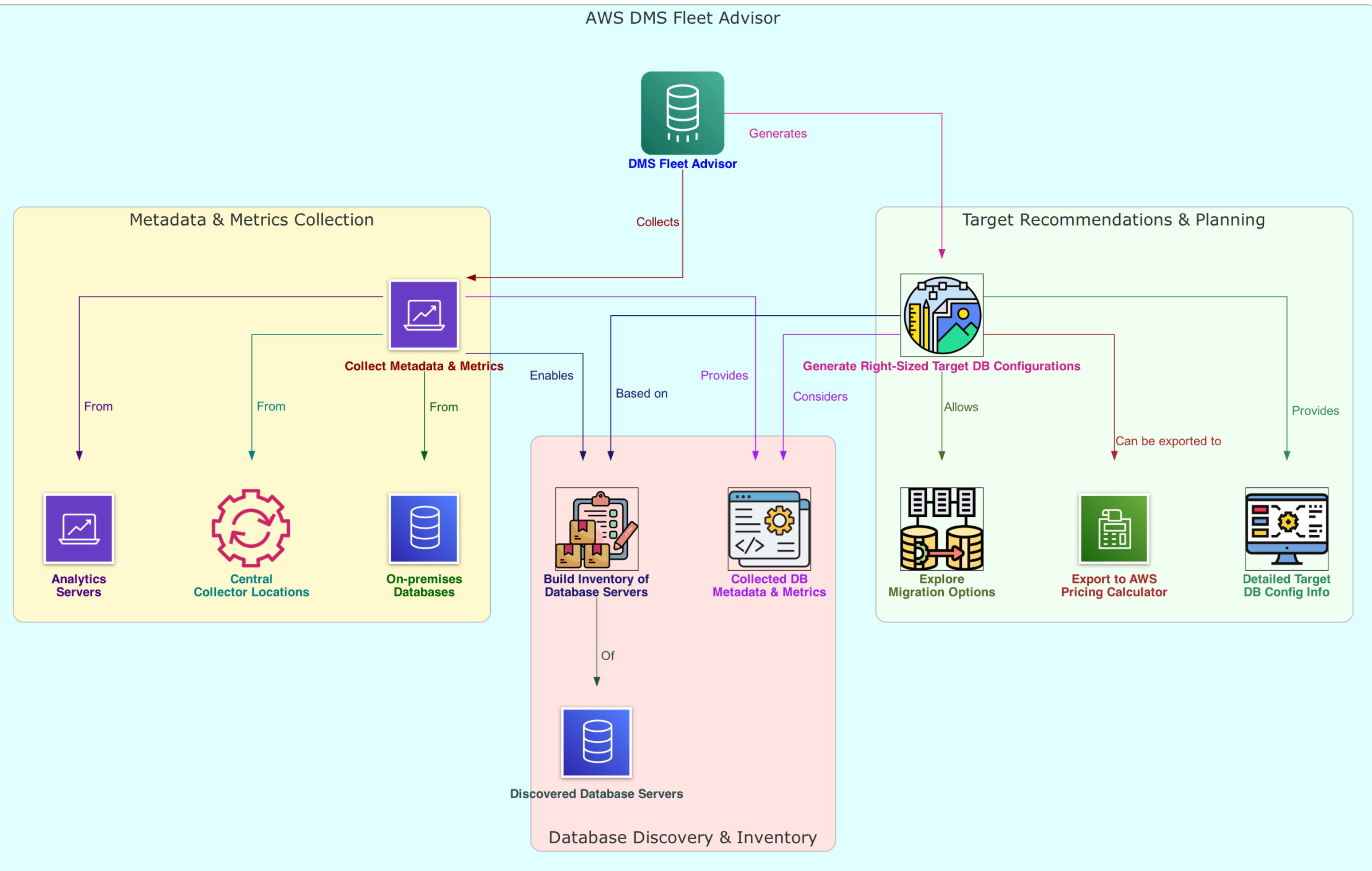
Aids in migration planning

8. Plan on-premises to AWS database migration

Leveraged by database engineers and administrators

For planning migration of on-premises databases to AWS

DMS Fleet Advisor Detailed



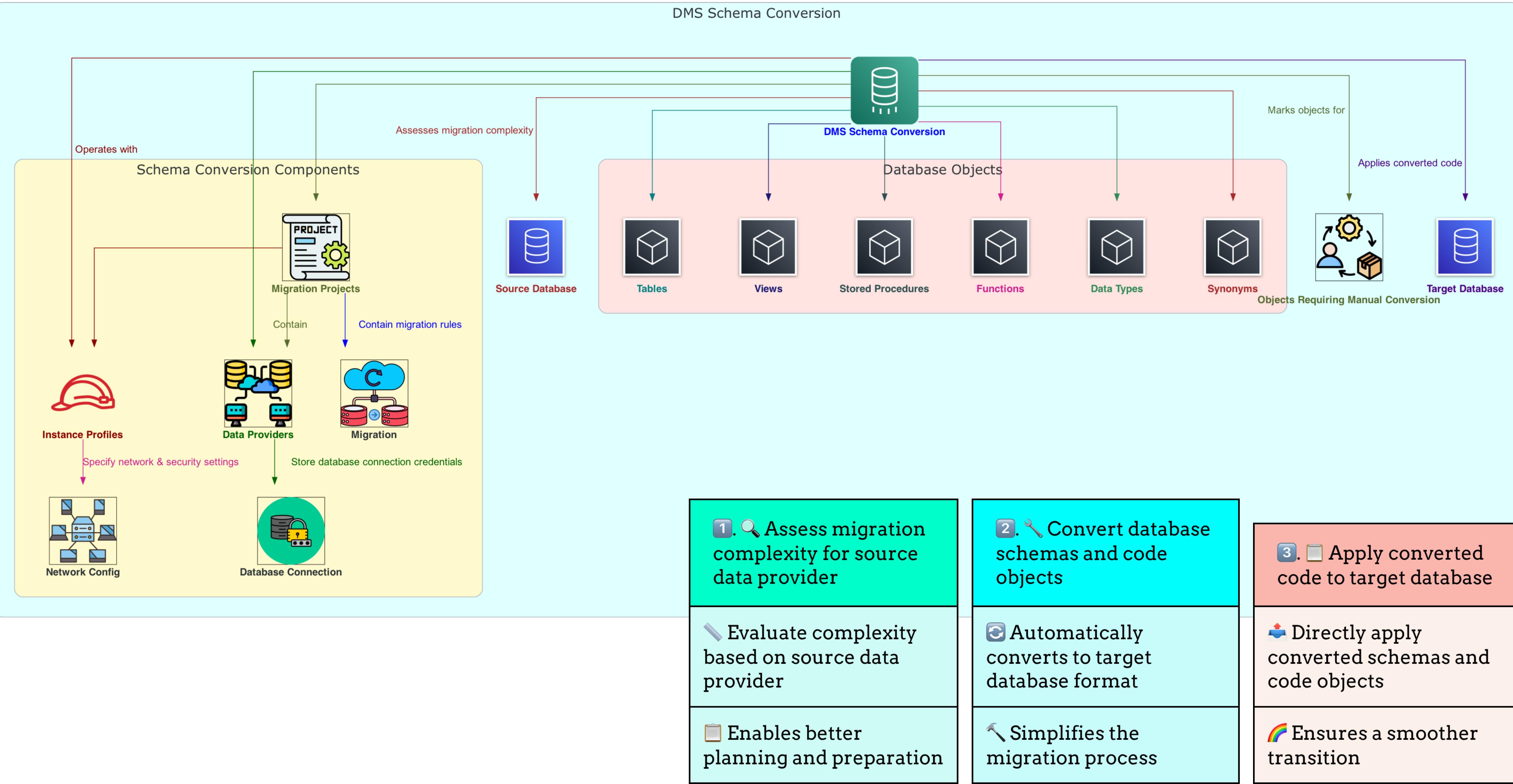
9. 💰 Optimize costs with AWS Pricing Calculator integration

🌐 Explore different migration options

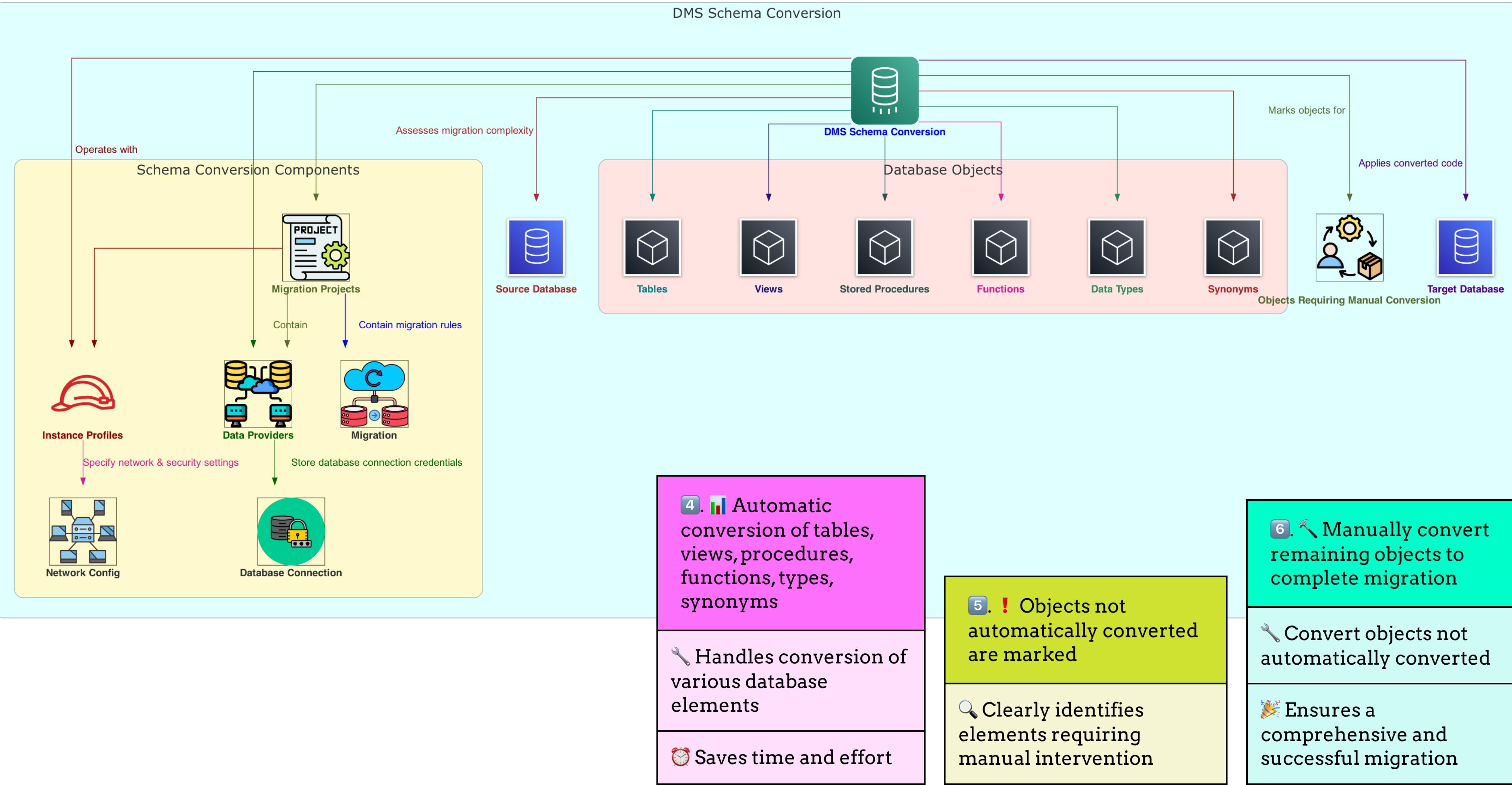
📈 Export recommendations to AWS Pricing Calculator

💰 Further optimize migration costs

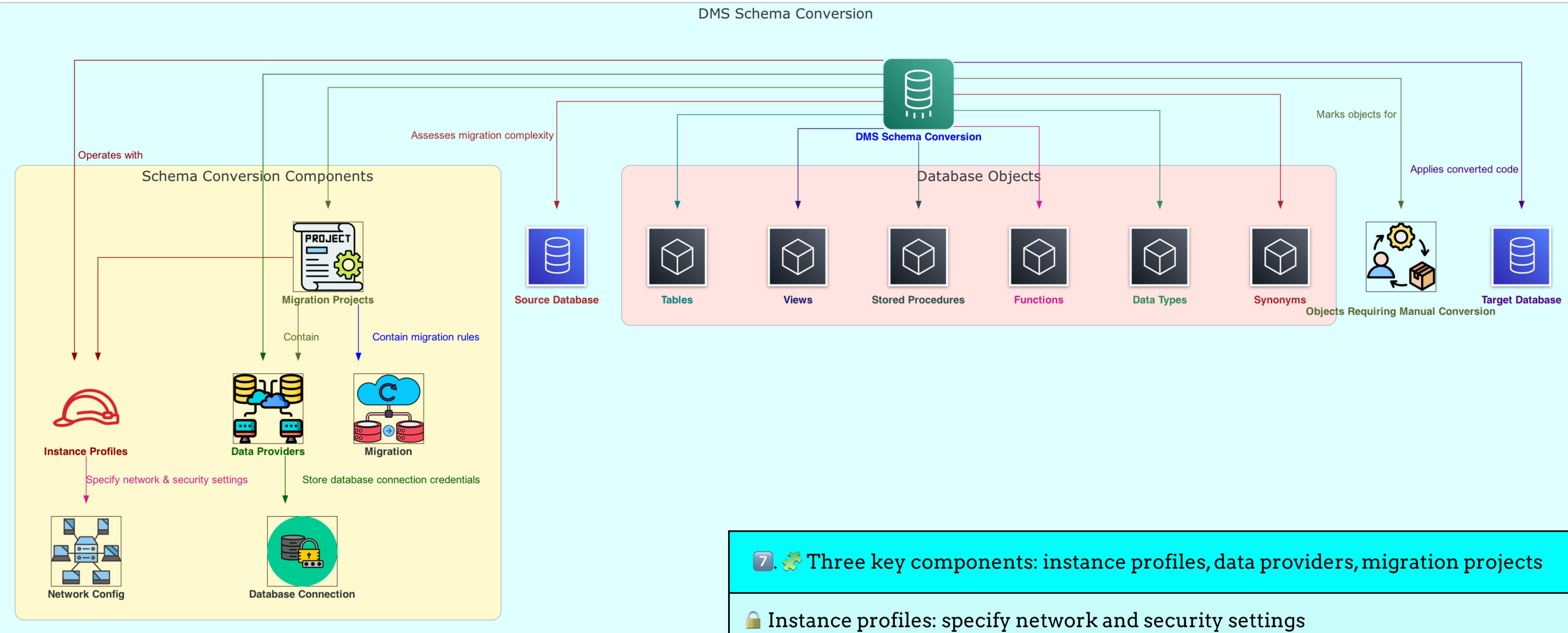
DMS Schema Conversion Detailed



DMS Schema Conversion Detailed



DMS Schema Conversion Detailed



7. Three key components: instance profiles, data providers, migration projects

 Instance profiles: specify network and security settings

 Data providers: store database connection credentials

 Migration projects: contain data providers, instance profile, migration rules

 Work together to design an effective conversion process

Source endpoints for data migration	
1. Oracle:	Versions 10.2 and higher (for 10.x), 11g, up to 12.2, 18c, 19c Editions: Enterprise, Standard, Standard One, Standard Two
	Versions: 2005, 2008, 2008R2, 2012, 2014, 2016, 2017, 2019, 2022 Full-load replication: Enterprise, Standard, Workgroup, Developer, Web CDC (ongoing) replication: Enterprise, Standard (2016+), Developer Express edition not supported
2. Microsoft SQL Server:	Versions: 5.5, 5.6, 5.7, 8.0
	Versions: 10.0 (10.0.24+), 10.2, 10.3, 10.4, 10.5, 10.6
	Versions: 9.4 and higher (for 9.x), 10.x, 11.x, 12.x, 13.x, 14.x, 15.x, 16.x
	Versions: 3.x, 4.0, 4.2, 4.4, 5.0, 6.0
3. MySQL:	Versions: 12.5, 15, 15.5, 15.7, 16 and higher
4. MariaDB (MySQL-compatible):	Version 9.7 (all fix packs), 10.1 (all fix packs), 10.5 (all fix packs except Fix Pack 5), 11.1 (all fix packs), 11.5 (Mods 0-8 with only Fix Pack Zero)
5. PostgreSQL:	Version 12
10. Cloud databases:	Microsoft Azure SQL Database
	Microsoft Azure PostgreSQL Flexible Server: 11.2, 12.15, 13.11, 14.8, 15.3
	Microsoft Azure MySQL Flexible Server: 5.7, 8.0
	Google Cloud for MySQL: 5.6, 5.7, 8.0
	Google Cloud for PostgreSQL: 9.6, 10, 11, 12, 13, 14, 15
	OCI MySQL Heatwave: 8.0.34
11. Amazon databases:	Amazon Aurora with MySQL compatibility
	Amazon Aurora with PostgreSQL compatibility
	Amazon S3
	Amazon DocumentDB (with MongoDB compatibility): 3.6, 4.0, 5.0
	Amazon RDS for IBM Db2 LUW

Target endpoints for data migration	
1. Oracle:	Versions: 10g, 11g, 12c, 18c, 19c Editions: Enterprise, Standard, Standard One, Standard Two
2. Microsoft SQL Server:	Versions: 2005, 2008, 2008R2, 2012, 2014, 2016, 2017, 2019, 2022 Editions: Enterprise, Standard, Workgroup, Developer
3. MySQL:	Versions: 5.5, 5.6, 5.7, 8.0
4. MariaDB:	Versions: 10.0.24-10.0.28, 10.2, 10.3, 10.4, 10.5, 10.6
5. PostgreSQL:	Versions: 9.4+, 10.x, 11.x, 12.x, 13.x, 14.x, 15.x, 16.x
6. SAP Adaptive Server Enterprise (ASE):	Versions: 15, 15.5, 15.7, 16+
7. Redis:	Versions: 6.x
8. IBM Db2 LUW:	Versions: 11.1, 11.5
9. Amazon databases:	Aurora MySQL-Compatible Edition Aurora PostgreSQL-Compatible Edition Aurora Serverless v2 Redshift Redshift Serverless S3 DynamoDB OpenSearch Service ElastiCache for Redis Kinesis Data Streams DocumentDB (with MongoDB compatibility) Neptune
10. Apache Kafka:	Amazon MSK and self-managed
11. Babelfish:	Versions: 3.2.0+ for Aurora PostgreSQL 15.3/14.8+



**Thanks
for
Watching**