

# 성공적인 DB 마이그레이션 사례

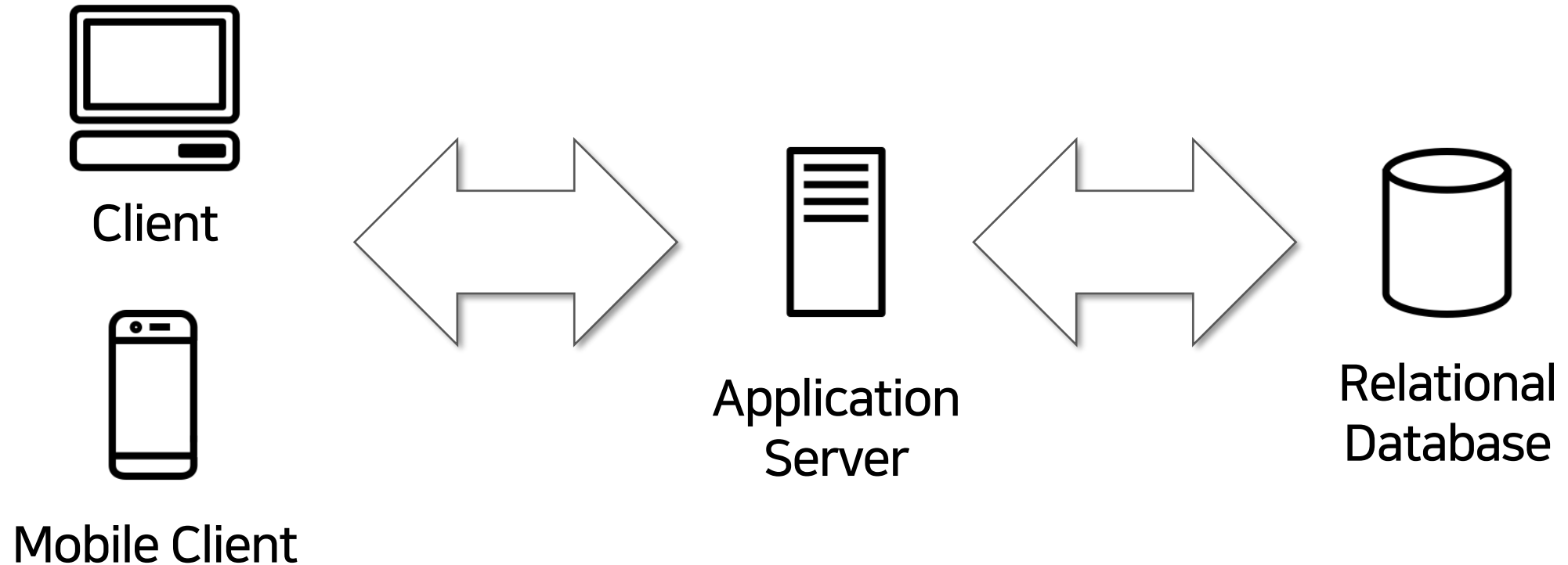
## 엔터프라이즈 환경에서 다양한 DB 마이그레이션 사례

안준환

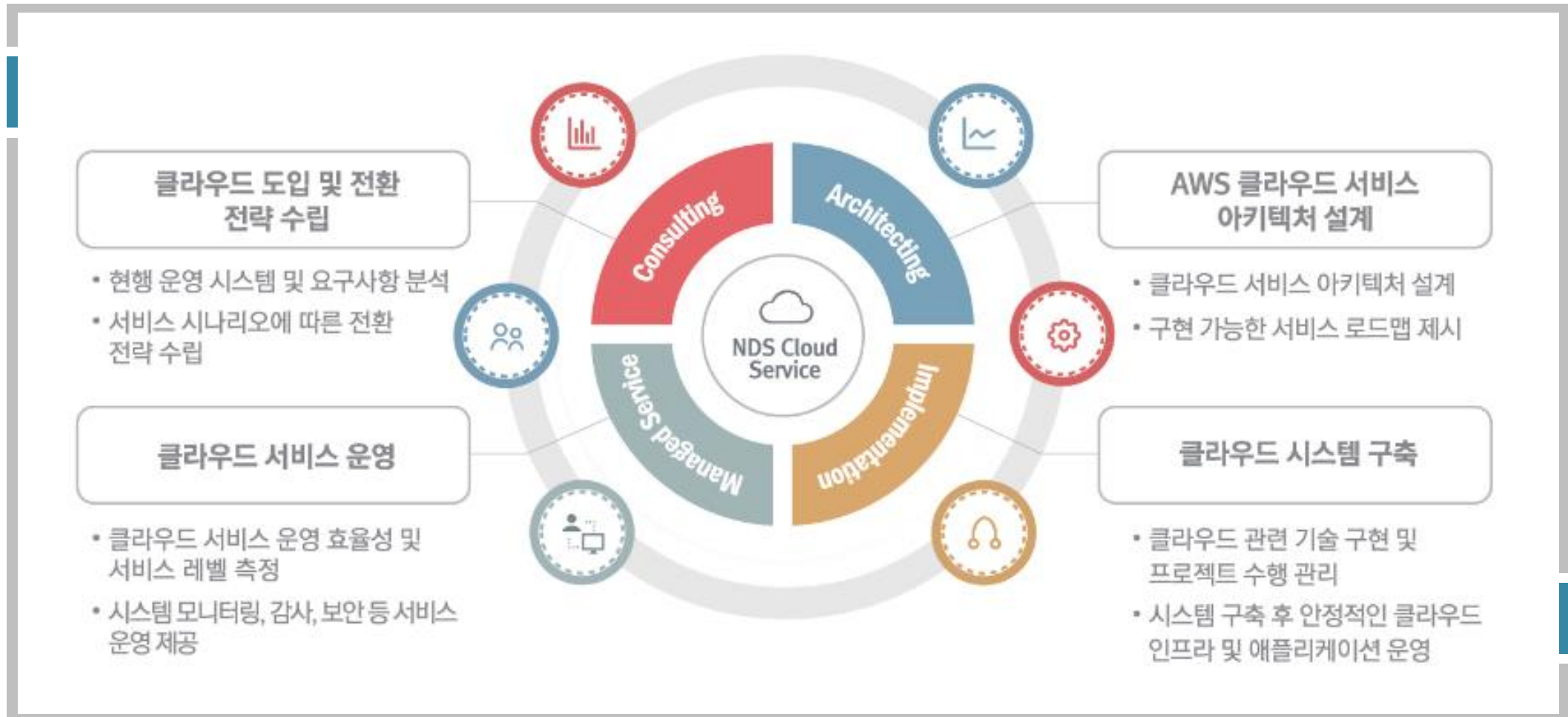
차장

(주)엔디에스 / Cloud Innovation Center

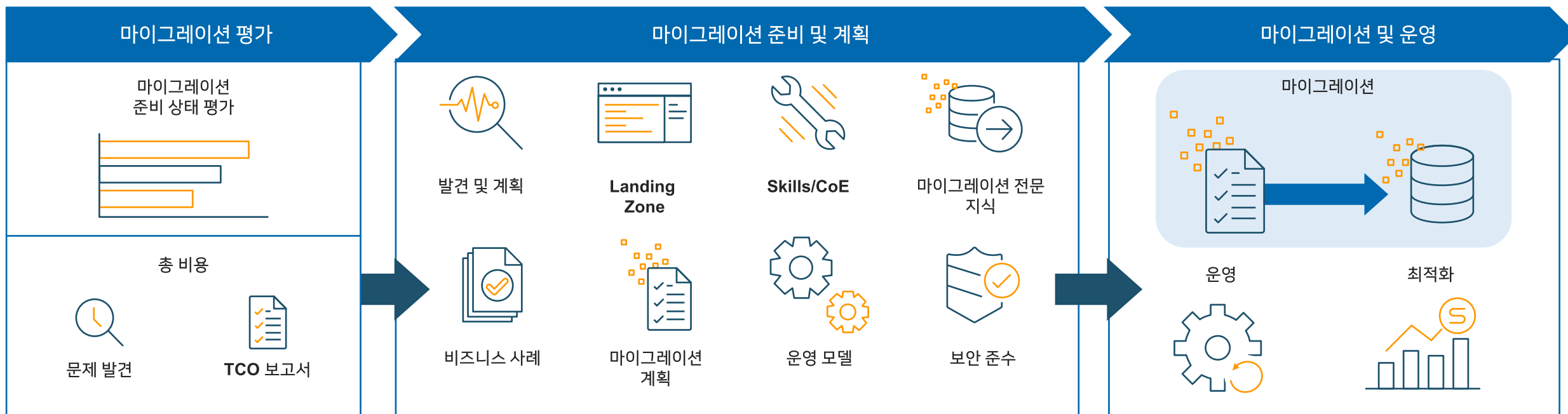
# 데이터베이스



# 엔디에스 클라우드 사업분야



# 엔디에스와 함께하는 AWS 마이그레이션



# 엔디에스 AWS 전문 역량



## Advanced Consulting Partner

Managed Service

Migration

Oracle

SAP

AWS Well-Architected Partner Program

Amazon RDS

Amazon EC2 for Windows Server

AWS Database Migration Service

AWS Public Sector Partner

- 2021 AWS **EC2 for Windows Server** Delivery 획득
- 2020 AWS **올해의 우수 파트너 (APN Differentiation Partner)** 수상
- 2020 AWS **Migration** Competency 획득
- 2018 AWS **Well-Architected Program** 파트너 인증
- 2018 AWS **SAP** Competency, **RDS** Delivery 획득
- 2017 AWS **MSP** (Managed Service Partner) 인증 획득
- 2017 AWS **Oracle** Competency, **DMS** (Database Migration Service) Delivery 획득
- 2017 AWS 100 Certified 획득
- 2017 AWS 아시아태평양 지역 **라이징 스타(APAC Rising Star)**상 수상
- 2016 AWS Advanced Consulting Partner 선정



## AWS 전문 역량/프로그램

### AWS COMPETENCIES ⓘ

Oracle Consulting Competency  
SAP Consulting Competency  
Migration Consulting Competency

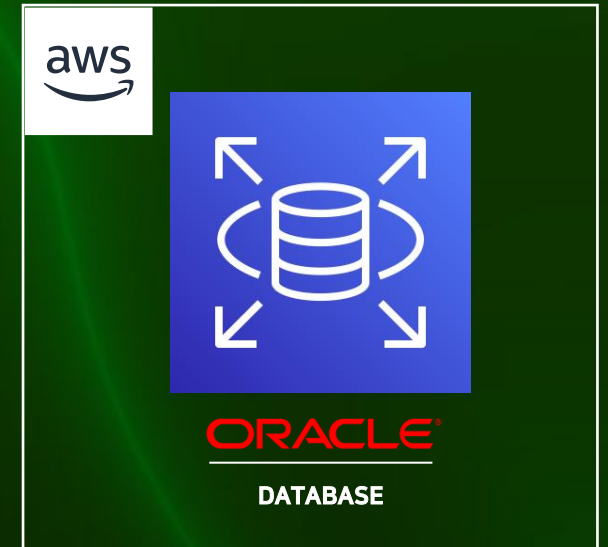
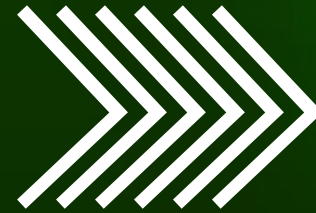
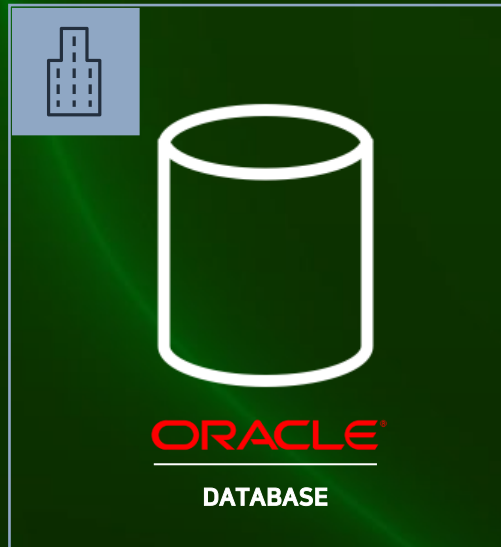
### PARTNER PROGRAMS ⓘ

Managed Service Provider  
AWS Public Sector Partner  
AWS Solution Provider Program  
AWS Public Sector Solution Provider  
Well Architected

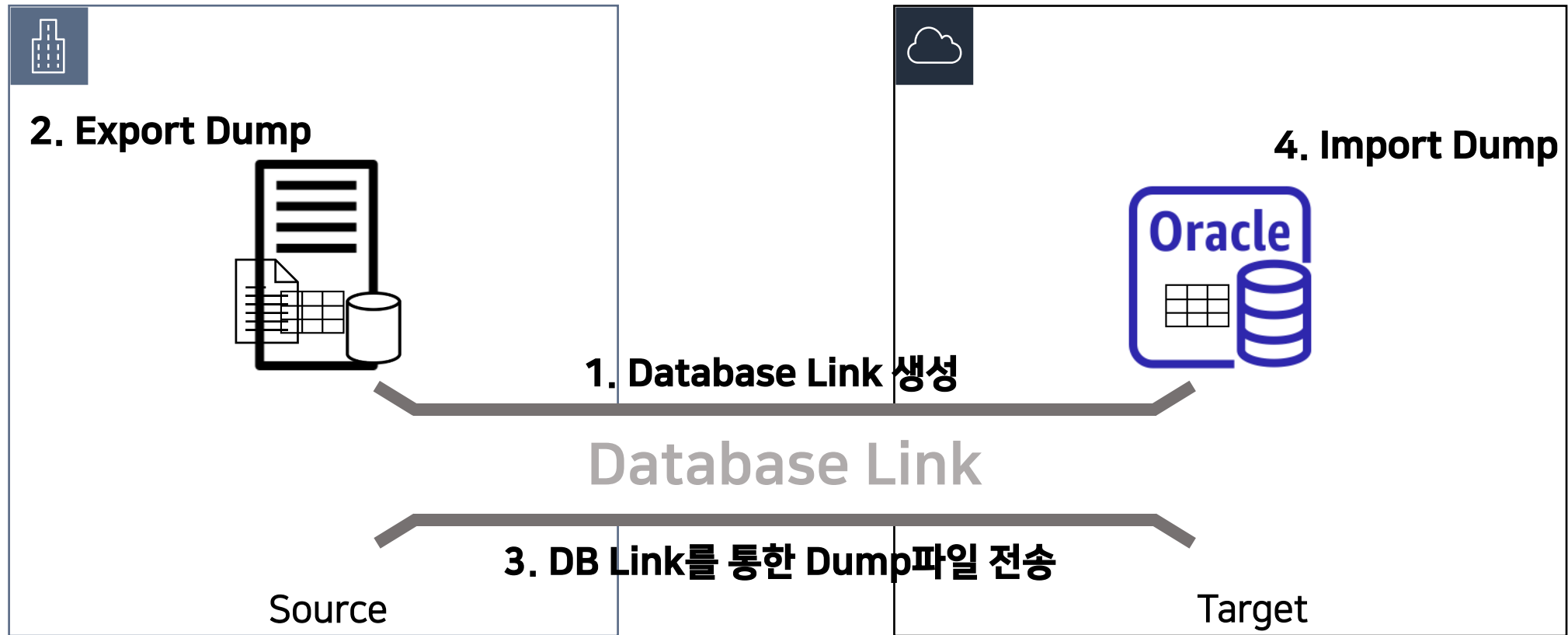
### AWS SERVICE VALIDATIONS ⓘ

Amazon RDS Delivery  
AWS Database Migration Service Delivery  
Amazon EC2 for Windows Server Delivery

# 조선·해양 엔지니어링사 DB 마이그레이션 사례

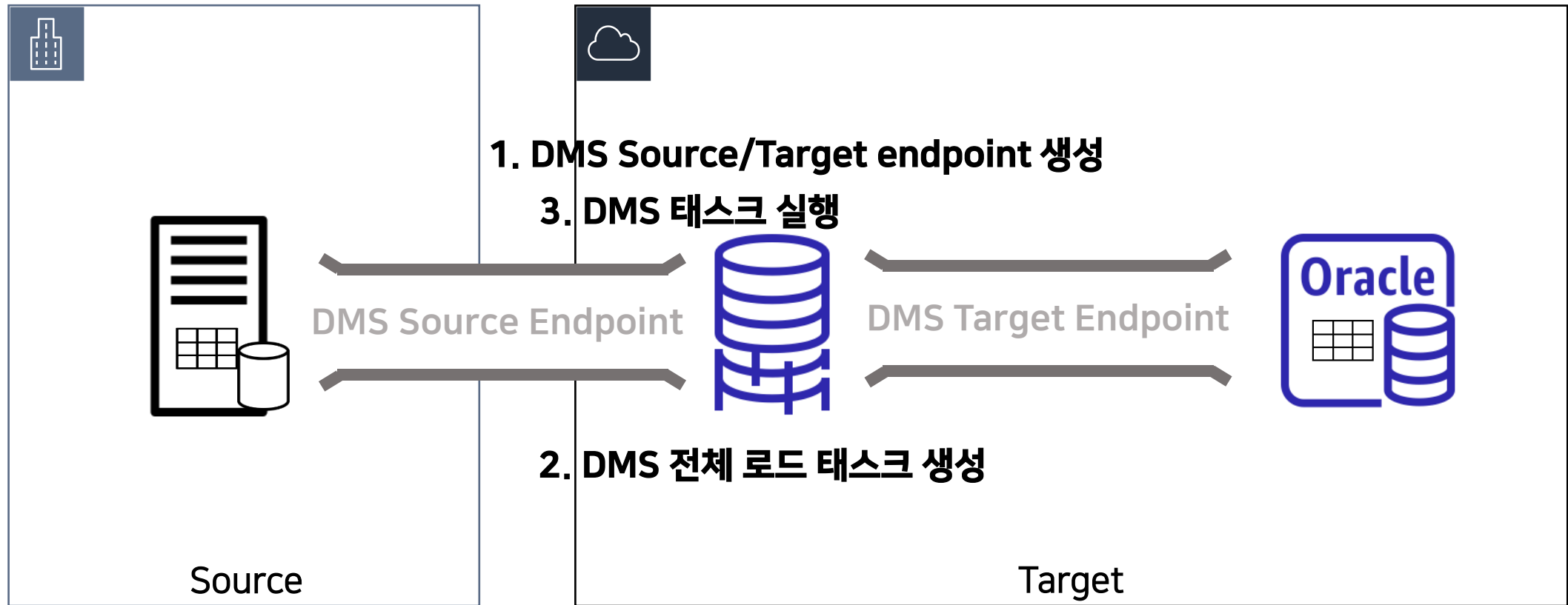


# DB 링크를 이용한 DB 마이그레이션



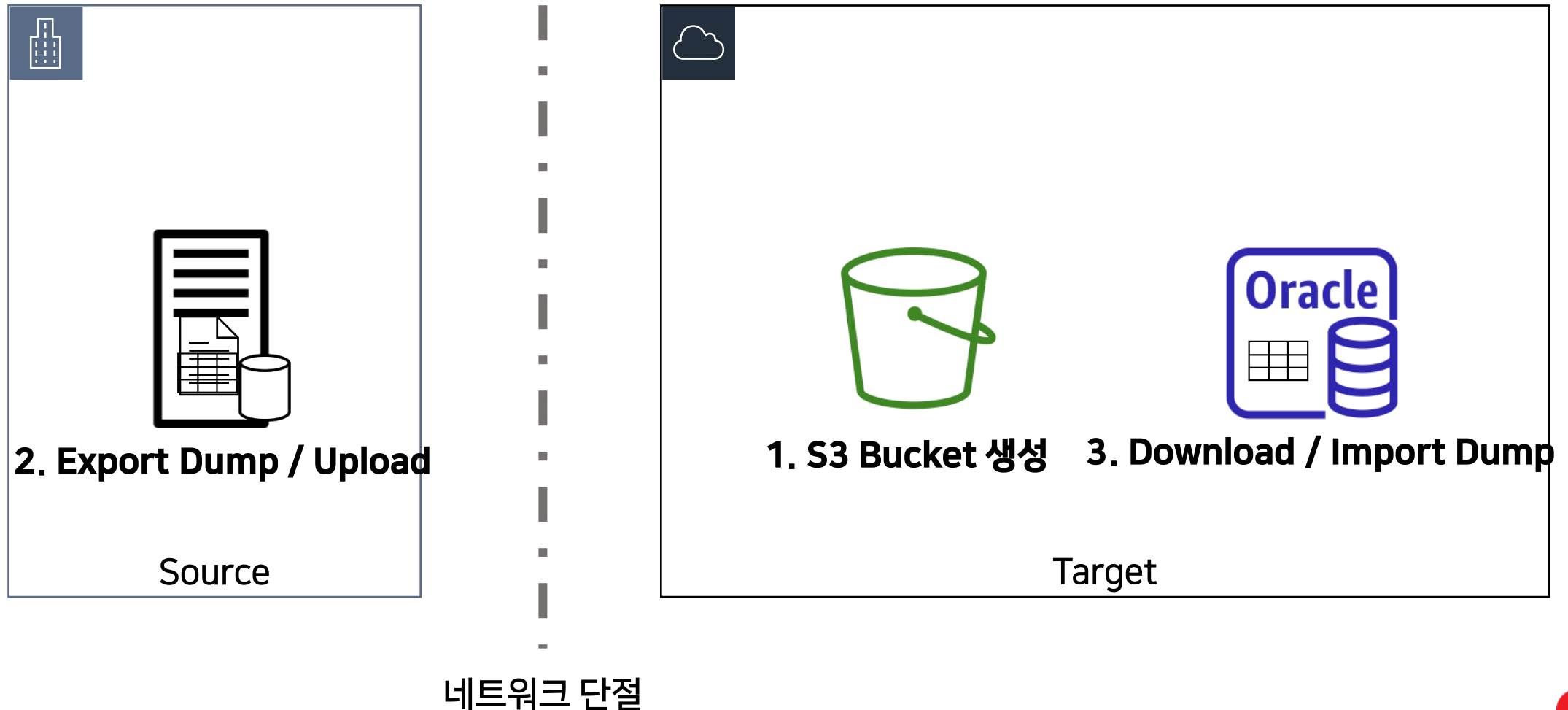


# AWS DMS를 이용한 DB 마이그레이션

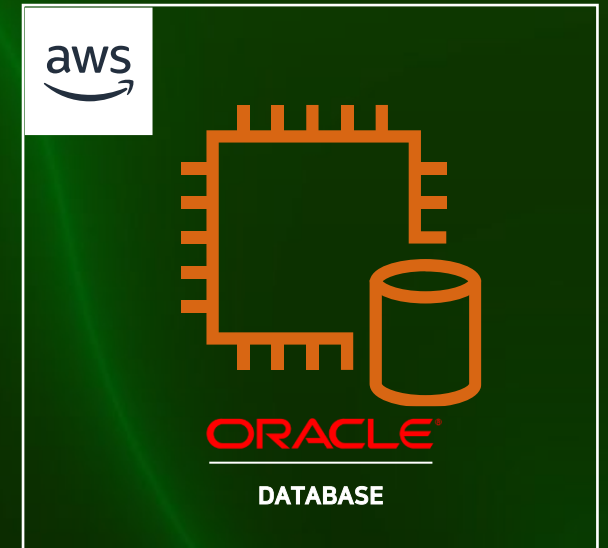
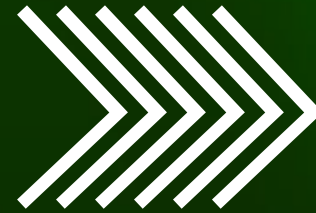
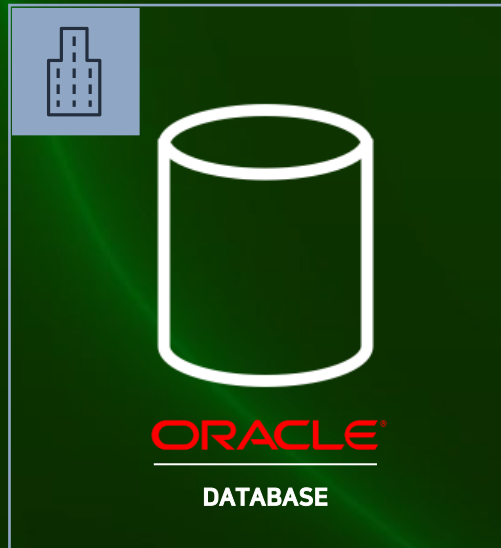




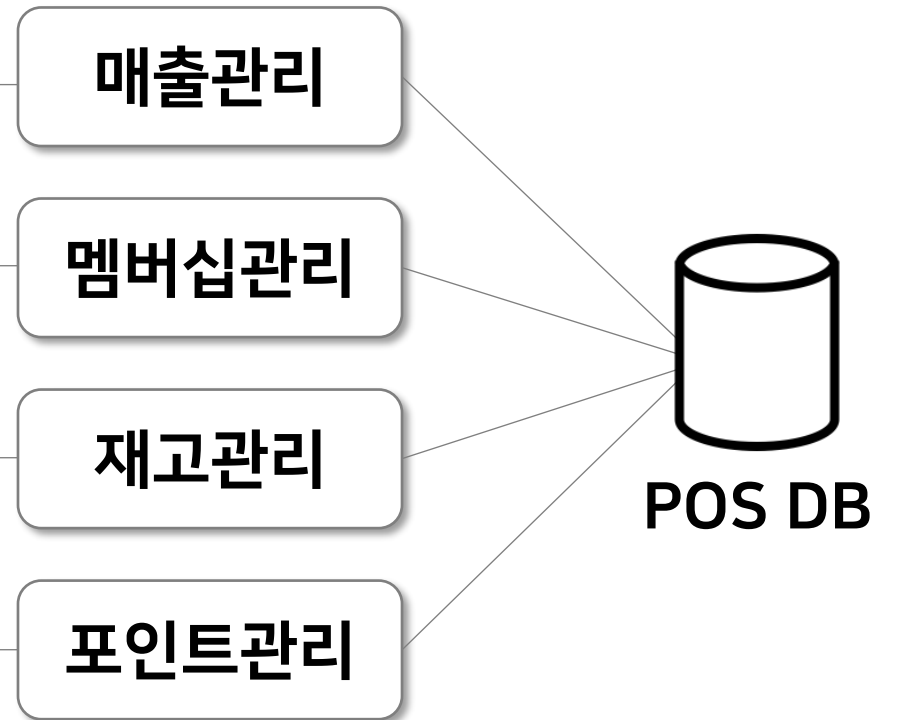
# Amazon S3를 이용한 DB 마이그레이션



# 글로벌브랜드 DB 마이그레이션 사례



# POS DB 마이그레이션



*데이터베이스 마이그레이션에 허용된 시간 최대 "2시간"*

# Export/Import DB 마이그레이션 소요 시간

## 데이터베이스 마이그레이션 환경

- Export & Import 방식 마이그레이션
- Oracle Database
- Datafile: 약 1TB
- Internet bandwidth: 약 30Mbps

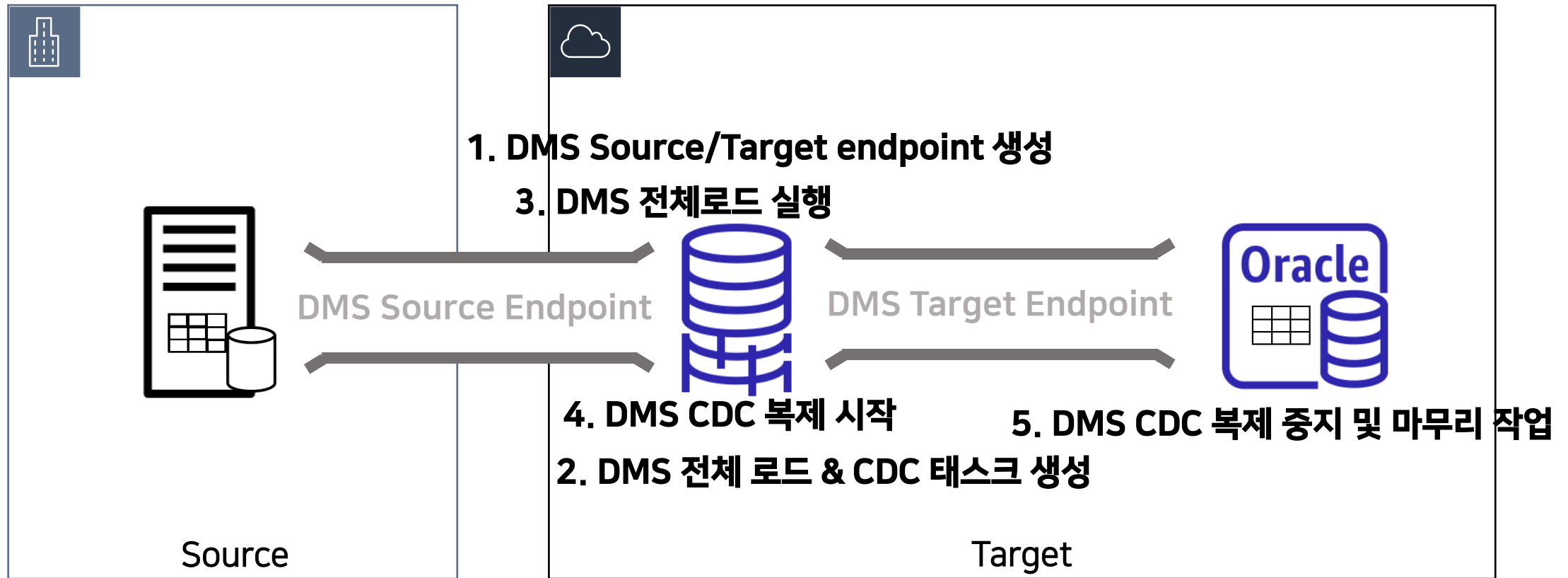


# DMS기반 CDC 적용 전 주요 준비사항

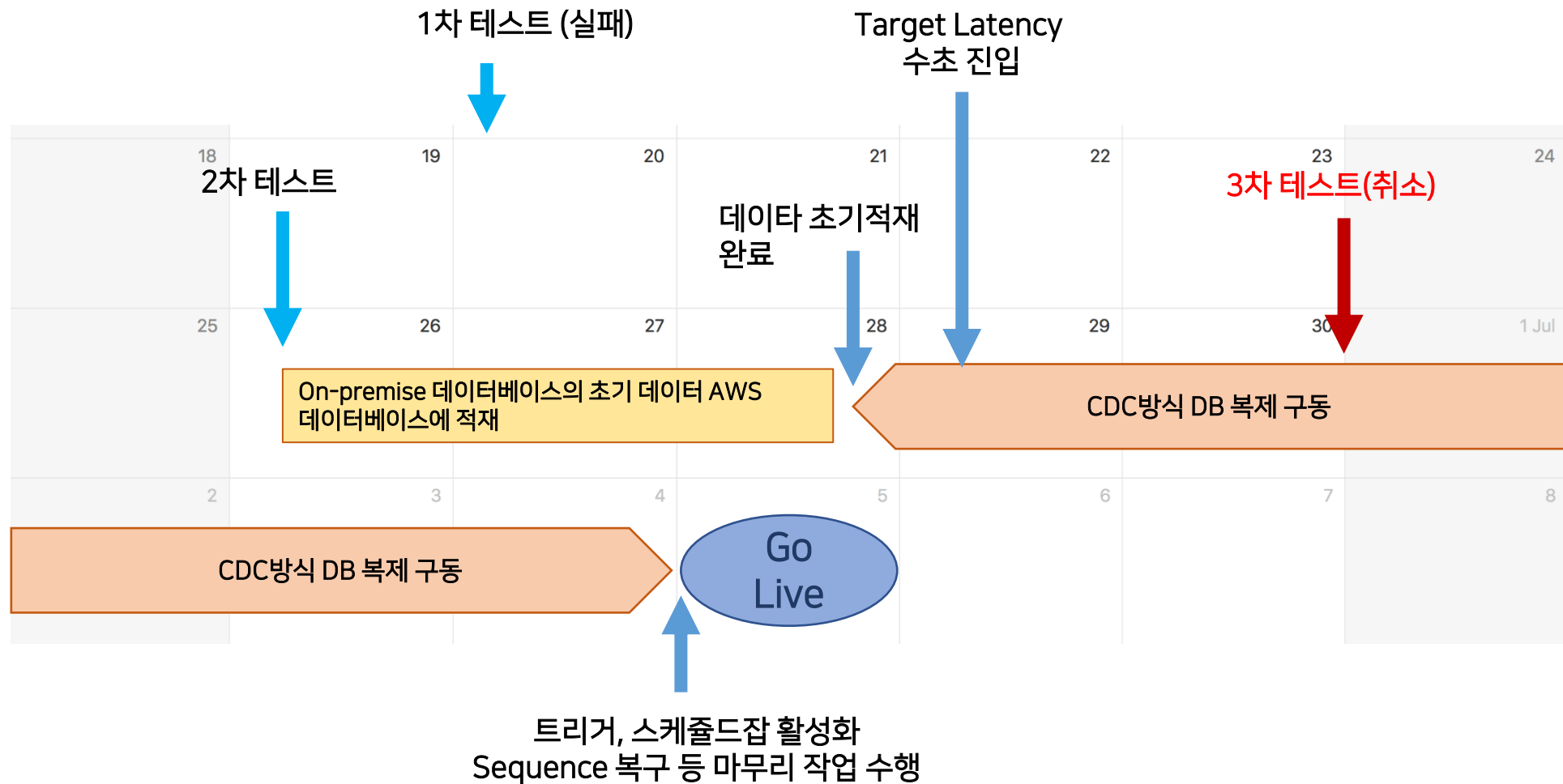


- 원본 데이터베이스 다이어트
- 초기데이터 적재
- PK가 없는 테이블 검토
- DB, Table단위 Supplemental Logging 설정
- Trigger / Constraints / Sequence 검토
- 목적지 데이터베이스 스케줄드 잡 정지
- xLOB 사이즈 확인

# CDC 방식 DB 연속 복제



# CDC기반 DB 마이그레이션 일정





# CDC기반 DB 마이그레이션 일정 세부

## 1차 테스트

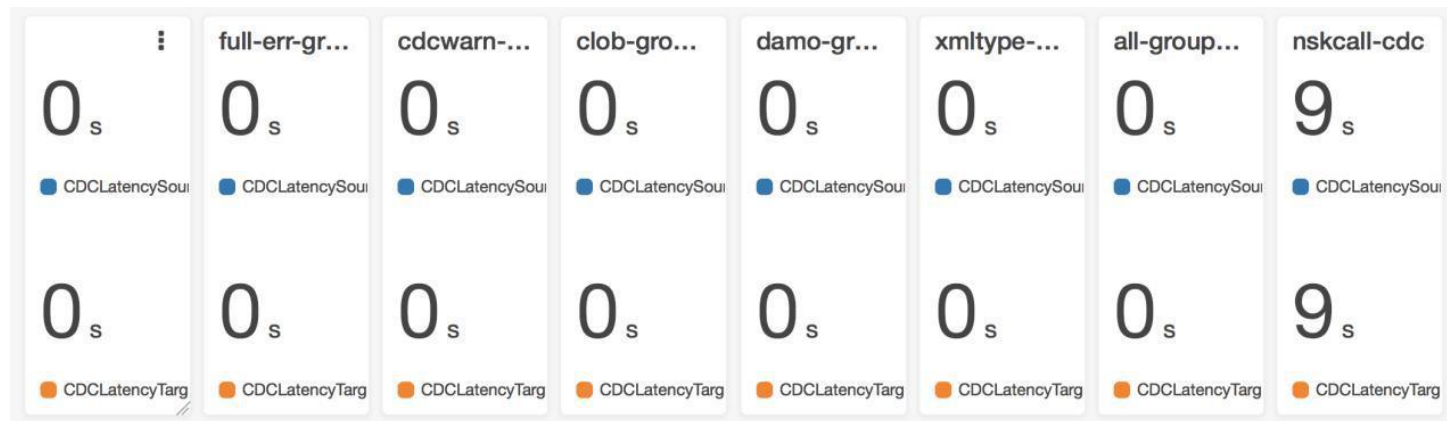
- 일부 스키마에서 전체 테이블 삭제/신규 입력 정기적 동작
- 이로 인해 CDC Source/Target Latency가 줄지 않는 현상으로 실패
- 해당스키마는 Go-Live 당일 전체 이동 (8GB용량 이동에 약 8분 소요)

## 2차 테스트

- 핵심스키마를 중점으로 집중 테스트 진행
- 문제가 되는 테이블 별 DMS Task 분류 및 처리

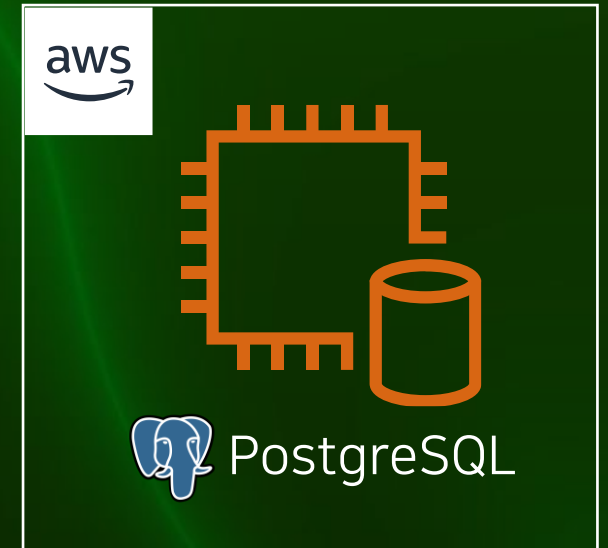
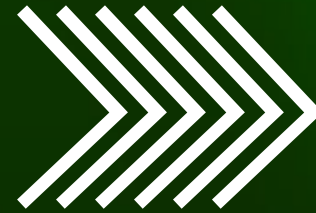
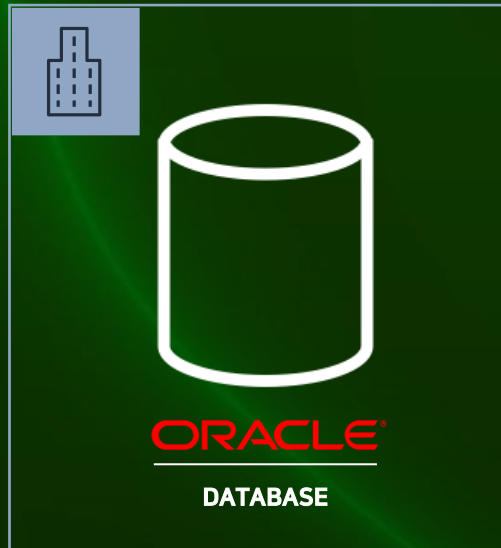
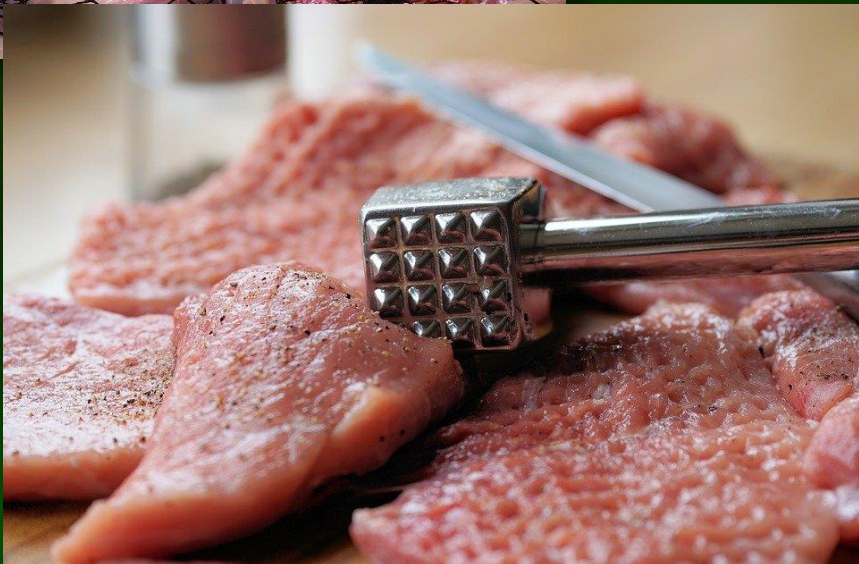
## 3차 테스트

- 취소 후 2차 테스트 상태로 Go-Live 진행



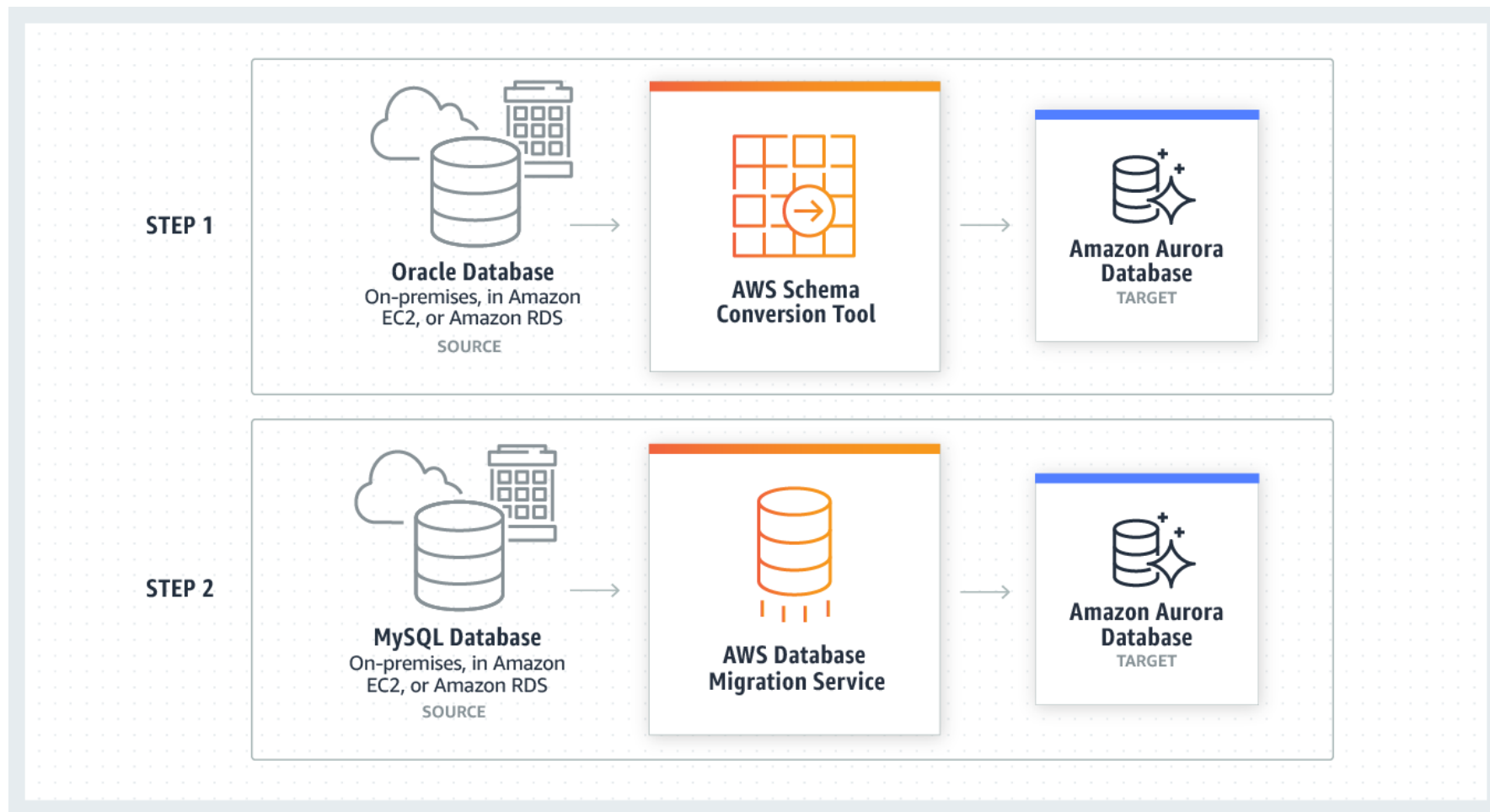
Task별 Source/Target Latency 모니터링

# 식재료 유통사 DB 마이그레이션 사례



# DMS기반 이기종 DB 마이그레이션 절차

## 이기종 데이터베이스 마이그레이션 절차



# AWS Schema Conversion Tool(SCT)

- 원본 데이터베이스 스키마와 데이터베이스 객체(뷰, 저장된 프로시저, 함수 등)를 목적 데이터베이스와 호환되는 형식으로 자동 변환 지원, 자동 변환이 불가능한 경우 변환에 대한 추천 기능 제공

## AWS Schema Conversion Tool(SCT) 지원 데이터베이스 목록

소스 데이터베이스	Amazon RDS의 대상 데이터베이스
Oracle Database	Amazon Aurora, MySQL, PostgreSQL, Oracle
Oracle Data Warehouse	Amazon Redshift
Azure SQL	Amazon Aurora, MySQL, PostgreSQL
Microsoft SQL Server	Amazon Aurora, Amazon Redshift, MySQL, PostgreSQL
Teradata	Amazon Redshift
IBM Netezza	Amazon Redshift
Greenplum	Amazon Redshift
HPE Vertica	Amazon Redshift
MySQL and MariaDB	PostgreSQL
PostgreSQL	Amazon Aurora, MySQL
Amazon Aurora	PostgreSQL
IBM DB2 LUW	Amazon Aurora, MySQL, PostgreSQL
Apache Cassandra	Amazon DynamoDB
SAP ASE	RDS for MySQL, Aurora MySQL, RDS for PostgreSQL 및 Aurora PostgreSQL



# SCT 데이터베이스 마이그레이션 진단 보고서

이기종 데이터베이스 마이그레이션을 위한 진단 보고서 제공

The screenshot displays the AWS Schema Conversion Tool (SCT) interface, specifically the 'Database Migration Assessment Report' for a project named 'Project1 - AWS Schema Conversion Tool'. The report is generated for a source database of 'Oracle Database 12c Enterprise Edition 12.1.0.2.0 (64bit Production), Enterprise edition' and a target of 'Amazon RDS for MySQL'.

**Executive Summary**

We completed the analysis of your Oracle source database and estimate that 100% of the database changes if you select Amazon RDS for MySQL as your migration target. Database storage objects and clusters. Database code objects include triggers, views, materialized views, materialized view package variables, package functions, package procedures, package types and package collections. That 100% of your entire database schema can be converted to Amazon RDS for MySQL automatically. medium-complexity actions to significant conversion actions.

**Database Objects with Conversion Actions**

Of the total 2 database storage object(s) in the source database, we were able to identify 2 (100%) minimal changes.

Figure: Conversion statistics for database storage objects

Object Type	Count	Percentage
Table (1: 1/0/0/0)	1	100%
Constraint (1: 1/0/0/0)	1	100%

Legend: Objects Automatically Converted (Green), Objects with simple actions (Blue)

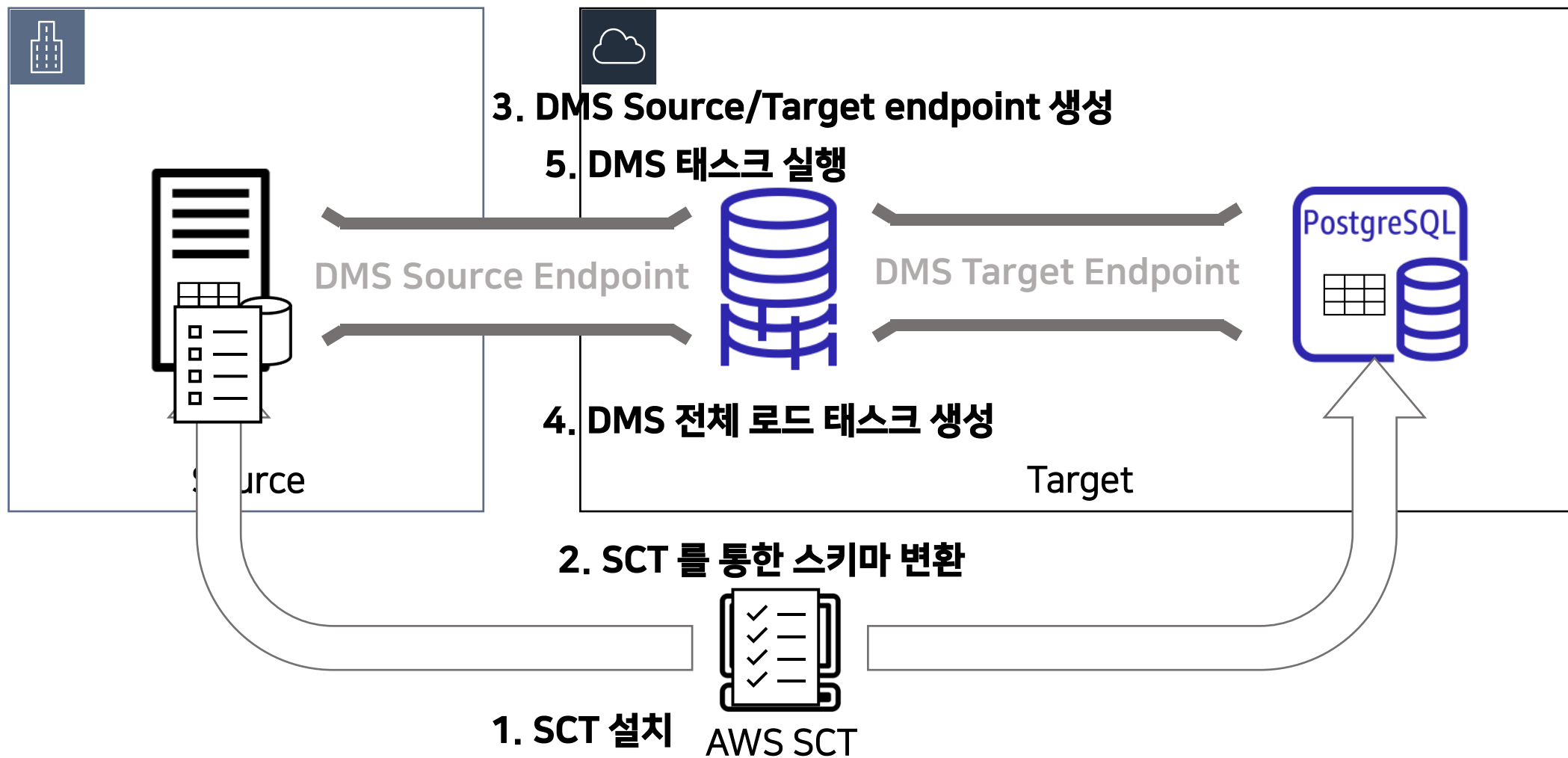
**Issues:**

- Issue: 194: MySQL doesn't support XMLTYPE tables. Recommended action: Revise your code to replace XMLTYPE tables with another solution. Number of occurrences: 20 | Documentation reference: <https://dev.mysql.com/doc/refman/5.7/en/select.html>
- Issue: 196: MySQL doesn't support OBJECT TABLE. Recommended action: Revise your code to avoid OBJECT TABLE. Number of occurrences: 2 | Documentation reference: <https://dev.mysql.com/doc/refman/5.7/en/create-table.html>
- Issue: 198: MySQL doesn't support GLOBAL TEMPORARY TABLE. Recommended action: Try using a temporary table. Number of occurrences: 1 | Documentation reference: <https://dev.mysql.com/doc/refman/5.7/en/create-table.html>
- Issue: 205: MySQL has the InnoDB internal maximum key length. Recommended action: For indexes on BLOB and TEXT columns have specified an index prefix length. Number of occurrences: 15 | Documentation reference: <https://dev.mysql.com/doc/refman/5.7/en/create-table.html>
- Issue: 207: MySQL doesn't support function indexes. Recommended action: Revise your code and try to use simple index. Number of occurrences: 1 | Documentation reference: <https://dev.mysql.com/doc/refman/5.7/en/create-table.html>
- Issue: 210: MySQL doesn't support FUNCTION or expressions AS DEFAULT VALUE. It is emulated by trigger. Recommended action: Please review generated code and modify it if necessary. Number of occurrences: 3 | Documentation reference: <https://dev.mysql.com/doc/refman/5.7/en/create-table.html>
- Issue: 325: MySQL does not support check constraints. Emulating triggers created

**Comparison of Database Objects:**

Category	Oracle	Amazon RDS for MySQL
Tables	1	1
Views	1	1
Materialized Views	1	1
Triggers	1	1
Functions	1	1
Procedures	1	1
Types	1	1
Sequences	1	1
Indexes	1	1
Constraints	1	1

# DMS기반 이기종 DB 마이그레이션



# 더 자세한 문의사항?



## Core Competencies

공공, 민간부문  
대형 SI/ITO 사업  
수행 경험

AWS 클라우드 기반  
개발, 컨설팅, 전환, 운영 등  
클라우드 전 영역 수행 경험

AWS 관련 기술 인력  
및 전문 영역 기술 인력  
다수 보유

클라우드 서비스 사업 역량

Application  
On-Premise

Domain  
Knowledge

High  
Consultancy  
and Specialty

Operational  
Excellence

AWS  
Cloud Managed  
Service

aws partner  
network

Advanced  
Consulting  
Partner

Managed Service

Migration

Oracle

SAP

AWS Well-Architected  
Partner Program

Amazon RDS

Amazon EC2 for  
Windows Server

AWS Database  
Migration Service

AWS Public Sector  
Partner



# 감사합니다!

안준환

차장

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