

ZConverter

# Case Study: KB Bank DR Implementation

How KB Financial Group achieved 99.99% availability with ZConverter DR

## Executive Summary

KB Financial Group, one of South Korea's largest banking conglomerates with over \$500 billion in assets under management, required a next-generation disaster recovery solution to meet increasingly stringent regulatory requirements from the Financial Supervisory Service (FSS).

### The Challenge:

- Existing DR solution provided 4-hour RPO and 6-hour RTO
- FSS mandated RPO < 5 minutes and RTO < 1 hour for core banking
- Annual DR tests required 48-hour preparation and caused service disruptions
- Legacy DR infrastructure costs exceeded \$2M annually

### The Solution:

ZConverter implemented a tiered DR architecture protecting 150+ critical banking systems across three data centers with automated failover capabilities.

### Key Results:

- RPO reduced from 4 hours to 5 seconds (99.97% improvement)
- RTO reduced from 6 hours to 12 minutes (96.7% improvement)
- DR testing time reduced from 48 hours to 2 hours
- Annual infrastructure costs reduced by 45%
- 100% FSS audit compliance achieved

## Technical Implementation

### Architecture Overview:

#### Primary Data Center (Yeouido, Seoul):

- 85 physical servers running core banking applications
- Oracle RAC clusters (12-node) for transaction processing
- IBM MQ message queuing infrastructure
- Total protected data: 48TB

#### DR Data Center (Pangyo, Gyeonggi):

- Cloud-based replica environment on NCP (Naver Cloud Platform)
- Auto-scaling capability for peak load handling
- Separate network path with redundant connectivity

### Replication Configuration:

- Tier 1 (Core Banking): Synchronous replication, RPO 0, RTO 8 min
- Tier 2 (Customer Portal): Async replication, RPO 5 sec, RTO 15 min
- Tier 3 (Internal Systems): Async replication, RPO 1 min, RTO 30 min

ZConverter's kernel-level replication was deployed on all 85 servers with the following configuration:

- Block size: 4KB (matching Oracle database block size)
- Compression: LZ4 (60% reduction in network bandwidth)
- Encryption: AES-256-GCM for data in transit
- Bandwidth allocation: Dedicated 10Gbps link with QoS prioritization

## Results & ROI Analysis

### Performance Metrics (12-month average):

#### Replication Performance:

- Average RPO achieved: 3.2 seconds
- Peak RPO during batch processing: 8.1 seconds
- Replication lag > 10 seconds: < 0.01% of time
- Data transfer efficiency: 94.7% compression ratio

#### Failover Testing Results:

- 12 monthly DR tests completed with 100% success rate
- Average failover time: 11.4 minutes
- Fastest failover: 7.2 minutes (non-peak hours)
- Slowest failover: 18.3 minutes (peak transaction period)
- Zero data loss across all test scenarios

#### Cost Analysis:

- Previous DR infrastructure annual cost: \$2.1M
- ZConverter solution annual cost: \$1.15M
- Annual savings: \$950,000 (45% reduction)
- 3-year ROI: 287%

#### Compliance:

- FSS audit: Full compliance (first time in 3 years)
- ISO 27001 recertification: Passed with zero findings
- Internal audit: Zero high-severity findings

#### Customer Impact:

- Online banking availability: 99.997% (up from 99.95%)
- Customer complaint reduction: 78% decrease in DR-related incidents
- Branch operations: Zero DR-related disruptions in 12 months