Oracle Replication: An Introduction

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September 26, 2002

Replication concepts

- Why replicate?
  - Availability
  - Performance
  - Integrity

Replication concepts

- Replication types
  - Snapshots
  - Multimaster

Replication concepts

- Deferred transactions
  - Not distributed transaction
  - No two-phase commit
  - Asynchronous

Replication concepts

- Queuing
  - Interprocess communication mechanism
  - Data structures
  - Processing tasks

Replication concepts

- Conflict resolution
  - Simultaneous changes
  - Built-in methods
  - User-defined methods

Replication concepts

- Replication administrator
  - Agent for object owners
  - Propagation and receipt of changes
  - Administrative tasks

Replication concepts

- Schema management
  - Direct DDL not replicated
  - DBMS_REPCAT.EXECUTE_DDL
  - Group should be quiesced

Replication concepts

- Quiescing
  - DBMS_REPCAT.
    {SUSPEND|RESUME}_MASTER_ACTIVITY
  - No DML when rep group quiesced

Replication architecture

- Replication groups
  - Units of replication activity
  - Contain logically related objects
  - Created by replication administrator

Replication architecture

- Replication objects
  - Packages
  - Internal triggers
  - Scheduled jobs

Replication architecture

- Advanced Queuing
  - Facility included in RDBMS (DBMS_AQ)
  - Replication built on foundation of AQ

Replication architecture

- Replication API
  - DBMS_REPCAT
  - DBMS_DEFER_SYS
  - DBMS_REPUTIL

Replication architecture

- DBMS jobs
  - DBMS_DEFER_SYS.PUSH
  - DBMS_DEFER_SYS.PURGE
  - DBMS_REPCAT.DO_DEFERRED_REPCAT_ADMIN

Case study

- System requirements
  - Campus common data
  - Planning system feeds operations
  - Not truly multimaster

Case study

- Why multimaster?
  - Immediate
  - Asynchronous
  - Driven from master site

Case study

- Database rebuild requirements
  - Test and development
  - Periodic repopulation from production export
  - Replication administrator retained
  - All replication groups and objects rebuilt

Case study

- Preparation
  - Create replication administrator
  - Grant privileges
  - Register as propagator
  - Schedule purge

Case study

- Implementation
  - Create repgroups
  - Create repobjects
  - Generate replication support
  - Schedule push
  - Add master databases to repgroups

Case study

- Post-implementation
  - Monitor DBA_REPCATLOG
  - Monitor alert logs and trace files
  - DBMS_REPCAT.RESUME_MASTER_ACTIVITY

Conclusion

- Many replication options exist
- Snapshots may be most suitable for reference data
- Multimaster may be most suitable for distributed systems
- Both require careful set-up and monitoring

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