Oracle Replication: An Introduction

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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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