Supporting off-line Transactions for RDC 4.6: Examining possible scenarios for non-real time use of RDC 4.6

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Assumptions/Scope/Disclaimer

- Assumption: Audience has a basic understanding of RDC 4.5.3 OnSite.
- Scope: RDC 4.6.
- Disclaimer: The functionality and approaches described in this presentation are not necessarily supported by Oracle Corporation for the deployment of RDC 4.6 OnSite. Furthermore, no statement is made about the impact of deploying these approaches on a validated system.

Supporting off-line Transactions for RDC 4.6

- One of the major considerations for deployment of RDC up to the present time has been the need to have "real-time" network connectivity to run RDC.
- However, this may not be practical in all cases:
  - Traveling "on-the-road" RDC users.
  - Deployment in areas with poor or limited internet/network connectivity.
  - Fault tolerance/failover solutions for RDC use.

Technical Solutions in RDC 4.6

- Can these off-line transaction for RDC become a reality in RDC 4.6?
- Yes, the key factor is the support of an 11g RDBMS.
- This provides several features in.
  - Grid Computing.
  - Real Application Clustering.
  - RDBMS-level Replication.
    - Oracle Database Lite database automatic synchronization
  - Oracle Streams (download to a local instance for read-only)
- These features can be used to synchronize entire Oracle instances in various configurations.

Standalone build for RDC 4.6 is a prerequisite

- Clearly, an MDR is not a prerequisite for either RDC 4.5.3 OnSite nor for RDC 4.6 OnSite.
  - Not supported in RDC 4.5.3, although several customers did choose this deployment
- Once the MDR is not present, the RDBMS level configuration becomes a single instance which can be copied/cloned through well known instance cloning/copying techniques.
- Even the cheapest laptops which are available today are capable of running a standalone instance of Oracle 11g without an MDR. This means a standalone instance of a local RDC environment is possible.

Replicating from the Standalone to the central RDC RDBMS

- Taking an example from Siebel SFA, the mobile "trickle-down" client is capable of local database to master RDBMS synchronization.
- While this is not an Oracle-specific method, there is consideration for Siebel to use some Oracle RDBMS replication methods in future Siebel version, such as Oracle Streams.
- Similar methods can be used for RDC.

Some possible 11g Synchronization Methods

- Use of Oracle Streams to allow downloaded "read-only" local RDC instances
  - Very useful for localized PDR generation
- Use of Oracle Mobile Client for automatic bi-directional data synchronization
  - See "Oracle Database 11g Product Family" Whitepaper (Jan 2008) for a description of Mobile "Lite" database option
- Examples in use for mobile client development http://developer.att.com/devcentral/Webcast_VCS/Embedded_Oracle_Mar_5th_2009_Webcast.pdf

Concept Demonstration

- Examples of some on-line websites/services using Oracle technology to run mobile applications
  - IFC for "Doctors on the Go", in use today.
- Examples of some on-line failover capabilities using RAC and DataGuard, which can be extended to an 11g environment.

Extend the Use of RDC Globally

- More deployable in regions where real-time network connectivity is not possible.
- Increasing the number of user-perspective backup and recovery options for application data.
- Allow more "traveling" use of RDC.
- Allow use of RDC in locations where wireless networks are prohibited (such as hospitals).

Possible Issues

- Exposure to security issues for loss of local PC.
- Exposure to validation issues on the local PC.
- Possible exposure to patient/data privacy issues on the local PC.

Summary/Conclusions

- Off-Line transaction processing for RDC is an inevitable direction of RDC.
- Remote synchronization of user data, similar to SFA models, is also a natural extension of RDC functionality, as clinical trial conduct moved away from a traditional site model to a more "patient-centric" model.
- Demand for off-line transactions for RDC will be driven by:
  - Global Trials that need to be conducted in the developing world
    - HIV
    - Public Health (SARS, H1N1)
  - CRAs who need RDC access where Site networking is not available/prohibited/incompatible
  - Investigators who need to use RDC "real-time" where there may not be network connectivity

Question and Answers

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- Sunil is a Global Oracle Health Sciences deployment expert for DBMS Consulting. He has been an active member of the OCUG community since 1996 and is extremely grateful for this opportunity to makes these presentations at OCUG 2009.

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