Planning and performing database migrations

Speaker name
Title
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Agenda

- TurboIMAGE
- Considerations
- Database architectures
- Migration planning
- Migration implementation
- Database migration tools
- Questions & answers

Data environment

Data environment

- TurboIMAGE unique features
  - Datasets and items
  - Keys
  - Sort items
  - Migrating secondaries, etc.
  - Master/detail
  - Chain read
  - Security paradigm
- 3rd party indexing
  - Omnidex, Superdex and TPI
- KSAM indexed files
- MPE flat files

Considerations

Technical considerations

- Able to support existing database access needs
- Efficiency/performance
- Maintenance ability
- Supporting tools
- Stability
- Scalability
- Administration
- DBA Tools

Other considerations

- Price
- Market share and popularity
- Manufacturer credibility
- Support track record
- User license cost
- Support and upgrade cost

Database architectures

RDBMS

- Particularities
  - Indexes
  - Column item types
  - Nulls
  - Rollbacks
  - Data page and log file caching
  - Tables not datasets; columns not items; rows not records
  - Views and table joins
  - No arrays
  - Triggers
  - Administration tools
- Unique features, SQL extensions
- Need a database administrator

Database and file options

- Oracle (Unix/PC)
- SQL Server (PC)
- DB2 (Unix/PC)
- Eloquence (Unix/PC)
- Sybase (Unix)
- Informix (Unix/PC)
- PostgreSQL/MySQL (Unix/PC)
- C-ISAM/D-ISAM (Unix/PC)
- Others…

Eloquence

- 95% of Image functionality
  - Supports Image Calls
- Ideal for up to 500 concurrent users
- Interesting to small to mid-sized customers
- Many vendors are or will be supporting Eloquence
- Upcoming support for Omnidex
- 2000-5000 customers worldwide
- Low cost per server
- Low impact migration choice

Technical issues to consider

- Automatic masters disappear
- Manual masters become tables
- Detail datasets of manual masters become tables with foreign key constraint
- Image sort items become clustered indexes
- IMSAM/Omnidex indexed keys becomes Indexes queried with LIKE operator

Technical issues to consider

Issues with:

- Nulls—with SQL extensions, to NULL or not to NULL
- Arrays—one column, multiple columns or new table
- Dates—6 or 8 character or Julian
- Integers—RISC or CISC

Migration planning

Analyze current application environment

- Surround code
  - Types of languages
  - Data entry screen tools
  - Development tools
  - User interface
  - Operational tools
- Dataset relationships
- Security
- Item storage/date types/arrays
- Transaction volume and performance (throughput)

Migration planning

- What about Omnidex and Superdex?
  - Relational databases have strong data querying capabilities but not keyword retrieval
  - Omnidex—migrates to Omni-Access
  - Superdex—best option is migration to Omni-Access
- Omni-Access is not as simple to implement as Omnidex

Database considerations

- Identical copy—Phase 1
  - Quicker method
  - May have performance issues
  - Not taking advantage of SQL
- Optimization/improvements—Phase 2
  - More effort
  - More efficient
  - SQL features, extensions, etc.

Phase 1

- Can you keep the code as is?
  - Tools translate DB access intrinsics to native or general access functions
  - Keep intrinsics, use a mapper API to make the appropriate native translation
- Define access method
  - Native
  - API mappers
  - ODBC/ADO/JDBC/etc.

Phase 2

- Second phase improvements
  - Normalization
  - Views and table joins
  - Code optimization for direct SQL access
  - DateTime
  - Null items
  - Triggers

Migration implementation

Setup new RDBMS

- The DBA issue
  - Training, hiring
  - Remote access
- Install new DB on new platform
- Make minimum access and configuration adjustments
- Create test database
- Link machines on network

Migration implementation

- Make copy of source database
- Create new DB structure
  - Native RDBMS tools
  - Native Schema scripts
  - Automated tools
- Consolidate and replicate the data
- Test the applications
- Data mirroring (pre- and post-production)

Migration implementation

- Export/import
  - Export data to flat files
    - Endien issue
  - Build import scripts
    - Nulls
    - Arrays
    - Column type conversions
    - Dates
    - Security
  - Import data from flat files through scripts

Database migration tools

Database migration tools

- Focused products for TurboIMAGE
  - Bridgeware
  - OpenTURBO
  - DBMotion
  - OpenTURBO
  - MBF-UDACentral
  - Others
- Application migration tools that offer some level of DB migration
  - AMXW
  - MPUX/Via Nova
  - Transoft, etc.

BridgeWare

- Fast map and load data with GUI
- No database expertise required
- Highlights “dirty data”
- Complex transformations
- Real-Time MPE data capture
- Bi-directional, high-speed data movement

OpenTURBO

- Bi-directional data replication at the application level allowing your to run some of your applications on HP-UX, and others on HP 3000
- 2PC for TurboIMAGE and ORACLE—transactions are posted to TurboIMAGE and ORACLE simultaneously in real-time
- Log and Fail-over—ORACLE applications log UPDATE transactions to a OPENTURBO LOGFILE, which is used to synch back to the TurboIMAGE database for fall-back recovery
- Performance profiler—OPENTURBO, TurboIMAGE, ORACLE, and Network Latency
- Real-time debugger and SQL translation—TurboIMAGE call analysis, SQL statement, network traffic dump, etc in real-time mode and at process (user) level

DBmotion

- Supports Image/KSAM/Flat to Oracle and SQL Server
- Automates Omnidex -> OmniAccess.
- Easy to use GUI interface with wizards
- Automates target database creation, data transfer and conversion
- Provides default structure and datatype mapping
- Estimates time to copy rows of tables and whole databases
- Handles arrays, nulls, dates and Omnidex!
- Merge Databases and files into one target Database
- Provides reporting features

MBF-UDACentral

- Explore database to understand what the database consists of
- Explore JDBC driver to understand their limitations
- Import data from multiple formats
- Export data to XML, CSV, HTML or e-mail for reporting, analysis or use in desktop applications
- Data editor and mapper
- Dynamic SQL for reporting and or moving data
- Distributed query execution
- Wizards for both Dynamics SQL and Distributed Query

In conclusion

- Careful planning will be vital to ensuring success
- Numerous options exist for implementation
- Take advantage of the experts…

Questions & answers

Thank you


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