



Banknorth Group, Inc.: Using the Snapshot Capabilities of Flashback Technologies



"By using Flashback Query, we've extended our reporting and troubleshooting capability providing to the minute data research options which is a big time saver and management tool."

---Greg Penk

VP of Data Administration, Banknorth Group

Corporate Profile: Banknorth Group, Inc.

- Bank and financial holding company; consolidated assets totaling over \$29 billion
- Over 380 branch locations in the Northeast
- In 2004, voted "Best Managed Bank" by Forbes Magazine
- <http://www.banknorth.com/>

Banknorth Group Inc.: Business Objectives for Flashback Technologies

- Important component of availability architecture
- Fast recovery from logical errors
- Provides finer granularity for reporting at teller and transaction level
- Extend data protection capabilities

Banknorth: Oracle Database 10g Architecture

- OLTP database
- 1500+ concurrent users
- 3-node HP-UX RAC Primary
- Data Guard Standby located 40 miles from primary database
- Recovery Manager (RMAN) online backups to the Flash Recovery Area (ASM disk group)
- Application: Encore Teller System

OVERVIEW

Banknorth Group, Inc. is implementing Oracle Database 10g as the backbone for the Encore Teller System to be used at over 360 branch locations. This strategic initiative provides automation to enhance customer service, increase teller productivity and reduce costs.

Database availability and protection are particularly critical to meet the high standards of a financial institution. In Banknorth's case, any unplanned system downtime was unacceptable, and they needed fast online, recovery abilities. To address these high availability needs, a Data Guard environment protects the production databases from site failure or disaster, and Flashback Technologies are used to quickly recover either production or standby databases. In addition, Flashback fulfilled a key requirement to provide quick, point-in-time viewing of reconciliation reports across all branches.

This case study focuses on how Banknorth effectively utilizes the snapshot capabilities of Flashback Technologies across the enterprise. As part of Oracle Database 10g, Flashback Technologies are available at no additional cost, thus precluding the need for 3rd party snapshot capabilities.

INTRODUCTION

Banknorth Group, Inc. is a \$29 billion banking and financial services company headquartered in Portland, Maine, and one of the 35 largest commercial banking companies in the United States. In addition to comprehensive banking products and services, Banknorth offers Mortgage, Insurance, Investment Planning, and Wealth Management services.

Banknorth, N.A. provides a full line of retail and commercial products and services. With over [380 branches and 540 ATMs](#) throughout northern New England and upstate New York, combined with online banking capabilities, Banknorth offers an unequalled personalized banking experience.

EXTENSION OF DATA PROTECTION STRATEGY

With their Oracle8 and Oracle9i Databases, Banknorth has relied on Recovery Manager (RMAN) for backup and recovery of their Oracle Databases and will continue using RMAN as the cornerstone of their backup and recovery with Oracle Database 10g. Flashback Technologies complement this strategy, providing additional data protection and fast recovery options.

Flashback Database will be enabled on their primary and Data Guard standby database for increased availability and protection. It will be enabled for a 24-hour period providing the following advantages:

- Corruption protection allowing real-time apply for the Data Guard standby database providing faster failover capability.
- Faster point-in-time database recovery than traditional methods.

EXPANDS FAST RECOVERY CAPABILITY FROM LOGICAL ERRORS

Banknorth has established detailed procedures and policies for managing their data. However, even in these extremely well managed IT environments, user error can occur. While Banknorth has built their environment to avoid these logical errors, they've also built-in a safety net with Flashback Technologies to be able to quickly recovery from human error---if necessary.

Their recovery plan now includes specific recovery scenarios and the fastest method of recovery. By training their staff on these capabilities, they can insure that DBAs are well armed with the best recovery tools and procedures.

After careful analysis, Banknorth decided to configure Automatic UNDO Retention for a 48-hour period. This provides a 48-hour window of opportunity to query and/or correct problems or erroneous transactions.

With Flashback Database enabled for a 24-hour time period, DBAs have the ability to quickly perform point-in-time recovery of the database within that 24-hour window. For full-database point-in-time recovery to a point past 24-hours, the DBAs use RMAN and traditional point-in-time recovery.

Banknorth is diligently manages their IT environment to avoid the need for recovery, but has specific recovery plans in place---just in case.

TIME SAVINGS FOR TROUBLESHOOTING

The electronic financial journals at Banknorth provide information on every transaction processed at their branches and ATMs. These financial journals maintain an accounting of all financial activities as well as provide a comprehensive auditing tool. If a need arises to research a transaction or data trend irregularity the bank auditors begin with electronic journals.

Before Flashback Query, a full day's worth of data was the smallest time period of data available to be queried. With over 380 branches, one days worth of transactions could generate as many as 500 pages of output to be printed and manually examined until the suspect transaction is identified.



Data Protection Strategy

- **Disk-Based Backup Strategy using RMAN**
- **Daily online RMAN backups**
 - **Archive Mode Enabled**
- **Flash Recovery Area**
 - **RMAN manages the allocated space**
 - **RMAN Retention Policy for 3 days**
- **Flashback Database**
 - **Enabled on the primary and standby database**
 - **Maintain 24 hours of Flashback Logging**
- **Automatic UNDO Retention set for 48 hours**

With the snapshot capabilities of Flashback Query, the report and query parameters are now defined at 15-minute intervals to provide better pinpointing of a smaller set of data to review. A transaction report for a 15-minute timeframe may produce output as few as 5 pages ready for analysis versus 500+ pages for a full day of reporting.

With minimal effort, Banknorth was able to query data at a finer granularity by building the Flashback Query functionality into their journal application reports. The “AS OF” command first available with Oracle9i Database Release 2, is used to create drop-down menus in their application querying data at 15-minute increments within the day. The user can easily select which 15-minute interval through the drop-down menu without ever having to call the DBA for assistance.

Since Flashback Query uses UNDO data of the Oracle Database, it doesn't incur additional overhead and delivers distinct advantages saving personnel time and assisting faster problem resolution.

CONCLUSION

Banknorth's Oracle environment includes implementation of Oracle8i Database, Oracle9i Database and now Oracle Database 10g. With their first deployment of Oracle Database 10g, the experienced Oracle DBA staff leveraged the snapshot capabilities of Flashback Technologies.

A few of the advantages they've experienced are:

- Enhances high availability architecture with Flashback Database's integration with Data Guard
 - Provides corruption protection allowing real-time apply at the standby site
- Provides a finer level of granularity for reporting tracking data at various intervals throughout the day
- Saves personnel time when troubleshooting data or transaction irregularities
- Excellent value proposition
 - Flashback Technologies provides snapshot capability at no additional cost with the Oracle Database 10g



Banknorth Group, Inc.: Flashback Technologies Case Study

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