

4rd Worldwide Firebird Conference 2006, Prague, Czech Republic

# Owner Migration – The Easy Way

## Session: TECH-R01103-S

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**Firebird-Conference**  
**Prague 2006**

# Overview

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- ➔ § Firebird and the term „Ownership“
- § Using SYSDBA and its consequences
- § The Hitchhikers Guide to the Firebird system tables
- § Owner Migration – The Process
- § Tool support



## Firebird and the term „Ownership“

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- § The creator (Firebird user) of a database and database objects gets automatically the „owner“
- § The owner of a database and database objects has special rights
  - Owner of a database (beside SYSDBA): Backup, running „gfix“, ...
  - Owner of database objects: Create fields for table, grant SQL privileges, alter stored procedure, ...
- § Database owner vs. database object owner
  - Database owner is not necessarily the owner of database objects
  - Changing the database owner through a backup/restore cycle doesn't change the owner of database objects automatically



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## Using SYSDBA and its consequences (1/2)

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- § Each Firebird installation comes with a user called SYSDBA
- § SYSDBA is an attractive Firebird user for newbies for creating databases and database objects, because you don't have to mess around with user management
- § SYSDBA as owner = bad idea, why?
  - No control over the SYSDBA password, if there is already a Firebird installation at your customers site
  - Web-hosters probably don't allow using SYSDBA
- § So, SYSDBA is fine for in-house usage, but a bad idea when deploying a Firebird database to your customer, web-hoster, ...



## Using SYSDBA and its consequences (2/2)

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### § Two ways to migrate the owner of a database

- Approach 1:
  - Create a metadata script of your database
  - Run this script with the new owner
  - Pump data from your source into your destination database
- Approach 2: Use a carefully researched approach of a mix of backup/restore cycles and direct system table manipulations, without the need of recreating the database and pumping data

### § Approach 2 is subject of this session



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## The Hitchhikers Guide to the Firebird system tables (1/4)

- § There is/was an entire session on Firebird system tables (Martijn Tonies; APPL-R01102-S)
- § System tables are special tables storing information (metadata) about the database and its database objects
- § System tables have the following features
  - Name of a system table starts with RDB\$
  - It's possible to query system tables like any other table
  - Some direct system table manipulations aren't rejected by the engine through internal system triggers
- § **ATTENTION:** Direct system table manipulations may corrupt your database, if you don't know exactly what you are doing!





## The Hitchhikers Guide to the Firebird system tables (2/4)

- § The most important system tables for this session are:
  - RDB\$PROCEDURES: All stored procedures
  - RDB\$RELATIONS: All tables and views
  - RDB\$ROLES: All roles
  - RDB\$USER\_PRIVILEGES: All SQL privileges
  
- § Field RDB\$OWNER\_NAME in RDB\$PROCEDURES, RDB\$RELATIONS and RDB\$ROLES holds the owner of a particular database object
  
- § Field RDB\$USER in RDB\$USER\_PRIVILEGES is the grantee of a SQL privilege



## The Hitchhikers Guide to the Firebird system tables (3/4)

- § Field RDB\$GRANTOR in RDB\$USER\_PRIVILEGES is the grantor of a SQL privilege
- § Field RDB\$GRANT\_OPTION in RDB\$USER\_PRIVILEGES defines if the user is allowed to grant SQL privileges to someone else
- § Field RDB\$PRIVILEGE in RDB\$USER\_PRIVILEGES stores the granted SQL privilege



# The Hitchhikers Guide to the Firebird system tables (4/4)

## § Possible values of RDB\$PRIVILEGE

RDB\$PRIVILEGE	SQL privilege
A	ALL
S	SELECT
D	DELETE
I	INSERT
U	UPDATE
E	EXECUTE
R	REFERENCE
M	MEMBER OF ROLE



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## Owner Migration – The Process (1/3)

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§ Example: Migrate employee.fdb from SYSDBA to EMPLOYEE

§ Make a copy of your database!

§ There are eight steps, with an optional sixth step, necessary

- Step 1: Create EMPLOYEE user
- Step 2: Backup with SYSDBA and restore with EMPLOYEE
- Step 3: Query existing owners of database objects
- Step 4: Change owner for tables, stored procedures and roles
- Step 5: Migrate SQL privileges
- Step 6 (optional): Create a role called SYSDBA
- Step 7: Backup and restore with EMPLOYEE
- Step 8: Tests



## Owner Migration – The Process (2/3)

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§ Step 1: Run „step1.bat“

§ Step 2: Run „step2.bat“

§ Step 3: Run „step3.bat“ and execute „step3.sql“

§ Step 4: Run „step4.bat“ and execute „step4.sql“

§ Step 5: Four sub-tasks

- Sub-task 1: Grant all rights for EMPLOYEE on database objects
- Sub-task 2: Migrate existing privileges to EMPLOYEE as grantor
- Sub-task 3: Delete all privileges with SYSDBA as grantor
- Sub-task 4: Delete all privileges with SYSDBA as grantee



## Owner Migration – The Process (3/3)

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### § Step 5 (continued)

- Sub-task 1 and 2: Run „MigrateUserPrivileges.exe “
- Sub-task 3: Run „step5\_3.bat “ and execute „step5\_3.sql “
- Sub-task 4: Run „step5\_4.bat “ and execute „step5\_4.sql “

### § Step 6 (optional): Run „step6\_optional.bat “ and execute „step6\_optional.sql “

### § Step 7: Run „step7.bat“

### § Step 8: Test your database (step8.sql)



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## Tool support

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- § Upscene Productions' „FBOwnerMigrator“ (FBOM)
- § Freeware without source
- § Request the download link by sending an email to [t.steinmaurer@upscene.com](mailto:t.steinmaurer@upscene.com)
- § **IMPORTANT:** Use it at your own risk ;-)



## Questions

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# Questions?

