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Owner Migration – The Easy Way

Session: TOOLS-P305-S

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Database Tools for Developers

Database Workbench, LogManager Series, Advanced Data Generator,
InterXpress for Firebird

<http://www.upscene.com>



Firebird-Conference
Prague 2005

Overview

- ➡ § 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“

- § The creator (Firebird user) of a database / database objects gets automatically the owner
- § The owner of a database / 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 not necessarily the owner of database objects
 - Changing the database owner through backup/restore doesn't change the owner of database objects automatically



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Using SYSDBA and its consequences (1/2)

- § 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
- § 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)

§ 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 and pump data from your source into your destination database, or
- 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; INTRN-A202-R)
- § System tables are special tables storing information (metadata) about the database and its database objects
- § System tables have the following properties
 - 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 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 us 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)

- § Sample: Migrate employee.fdb from SYSDBA to EMPLOYEE
- § Make a copy of your database!
- § There are eight 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)

§ 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)

§ 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



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Tool support

- § Upscene Productions' „FBOwnerMigrator“ (FBOM)
- § Freeware without source
- § Included on the conference CD
- § **IMPORTANT:** Use it at your own risk ;-)



Questions

Questions?

