

Hibernate 3.3.2

Lance Feagan

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1 Introduction

Hibernate enables powerful relational persistence for Java programmer's. When used with Hibernate annotations, a developer can be very productive and develop applications that run against all major databases by decorating their Java class files with simple, intuitive annotations.

1.1 Overview

The overview of the steps below gives a roadmap for experienced users. Newer users will want to read the more detailed instructions found in the following sections to help fill in the gaps.

1. Informix
 - (a) Download and install Informix 11.50 database software.
 - (b) Touch files for root chunk of:
 - i. Root database space
 - ii. A dataspace with non-default page size (8 KiB - 16 KiB)
 - iii. A smartLOB space.
 - (c) Configure sqlhosts for SQLI connection, typically using onsoctcp.
 - (d) Configure onconfig to use default SmartLOB space via SBSPACE-NAME.
 - (e) Start the Informix instance.
 - (f) Use onspaces to create the non-default page size database space and the SmartLOB space.
2. Hibernate
 - (a) Download Hibernate 3.3.2 source code
 - (b) Apply the patch file for Informix to Hibernate.
 - (c) Compile Hibernate.
 - (d) Enjoy using Hibernate.

2 Informix

If you have no already installed Informix, please do so now. These instructions assume you are familiar with bringing up a basic Informix instance, including configuration of the onconfig and sqlhosts files creation of a suitable root database space (rootdbs).

2.1 Data Space

Because of the generic nature, Hibernate may often define columns of type VARCHAR(255) and use them in composite keys. If the data space is using the default 2k or 4k page size, this may lead to error -550, "Total length of columns in constraint is too long.". The solution is to use a non-default page size for the data space. The formula to compute the maximum length of a constraint in Informix based on the page size is:

$$((\text{pageSize} - 93) / 5) - 1 = \text{maximumConstraintLength}$$

Below are a few example maximum constraint length calculations.

```
For 2k pages: ((2048 - 93) / 5) - 1 = 390 bytes
For 4k pages: ((4096 - 93) / 5) - 1 = 799 bytes
For 8k pages: ((4096 - 93) / 5) - 1 = 1618 bytes
For 16k pages: ((16384 - 93) / 5) - 1 = 3257 bytes
```

Once you have decided on a page size, you can create a new space:

```
onspaces -c -d <spaceName> -p <pathToSpaceStorage> -o <offsetIntoStorage> -s <sizeInKiB> -k <pageSizeInKiB>
```

For example, to create a new dataspace named "space0" of size 200,000 KiB with page size 8 KiB at "\${INFORMIXDIR}/tmp/ids0.space0":

```
touch "${INFORMIXDIR}/tmp/ids0.space0"
chmod 660 "${INFORMIXDIR}/tmp/ids0.space0"
chown informix:informix "${INFORMIXDIR}/tmp/ids0.space0"
onspaces -c -d space0 -p "${INFORMIXDIR}/tmp/ids0.space0" -o 0 -s 200000 -k 8
```

2.2 CLOB/BLOB Data Type Support

If your instance already contains a SmartLOB space and has the default storage space configured in the onconfig, you may skip this section.

2.2.1 SmartLOB Space Creation

The enhanced Informix Hibernate dialect provided as a patch file makes use of CLOB/BLOB data types. This requires a SmartLOB space be available as the default SmartLOB space. A SmartLOB space named "slspace0" with size 200,000 KiB stored in a file at "\${INFORMIXDIR}/tmp/ids0.slspace0" can be created with the following commands.

```
touch "${INFORMIXDIR}/tmp/ids0.slSPACE0"
chmod 660 "${INFORMIXDIR}/tmp/ids0.slSPACE0"
chown informix:informix "${INFORMIXDIR}/tmp/ids0.slSPACE0"
onspaces -c -S slSPACE0 -p "${INFORMIXDIR}/tmp/ids0.slSPACE0" -o 0 -s
200000
```

2.2.2 Default SmartLOB Space

To make sure all CLOB/BLOB data is stored to the new SmartLOB space, set the instance's default CLOB/BLOB storage space to be the new space. This is on my setting the SBSPACENAME parameter to the name of the new SmartLOB space.

```
SBSPACENAME slSPACE0
```

3 Hibernate

Although Hibernate 3.3.2 includes an Informix dialect, it contains defects that render it unable to properly generate the necessary DDL. We have produced and included a patch file for Hibernate 3.3.2 that will allow you to use this release with Informix.

3.1 Download

Hibernate 3.3.2 can be downloaded from <http://sourceforge.net/projects/hibernate/files/>. Download either "hibernate-3.3.2.ga.tar.gz" or "hibernate-3.3.2.ga.zip".

3.2 Patch

1. Extract the contents of the Hibernate archive. The extracted folder should be named "hibernate-distribution-3.3.2.GA".
2. Change to the "hibernate-distribution-3.3.2.GA/project/" directory in the extracted archive.
3. Test the patch file with a dry run and verify that the output looks like that shown below.

```
$ patch -dry-run -p0 -i ~/projects/Hibernate/distribution/3.3.2/hibernate-3.3.2_informix.patch
patching file ./core/src/main/java/org/hibernate//dialect/Cache71Dialect.java
patching file ./core/src/main/java/org/hibernate//dialect/DB2Dialect.java
patching file ./core/src/main/java/org/hibernate//dialect/Dialect.java
patching file ./core/src/main/java/org/hibernate//dialect/InformixDialect.java
patching file ./core/src/main/java/org/hibernate//dialect/MySQLDialect.java
patching file ./core/src/main/java/org/hibernate//dialect/SAPDBDialect.java
patching file ./core/src/main/java/org/hibernate//mapping/ForeignKey.java
```

4. If you receive any messages similar to those below, there may be something awry with either the Hibernate downloaded or the application of the patch.

```
Hunk #1 FAILED at 391.
Hunk #2 FAILED at 404.
2 out of 2 hunks FAILED - saving rejects to file
src/org/hibernate/dialect/Cache71Dialect.java.rej
```

5. Once satisfied with the results of the dry run, run the patch command without the “-dry-run” flag.

```
$ patch -p0 -i ~/hibernate-3.3.2_informix.patch
```

Note: The patch file was created with "diff -a -w -C 10 -rBN". Using the default three lines of context was not enough to avoid hunk errors, but using ten lines provides enough context to avoid this.

3.3 Build

Building Hibernate requires an IBM or Sun JDK 1.5 be locatable via PATH. Hibernate cannot be built with JDK 1.4.2 (lacks generics) or 1.6.0 (JDBC4 abstract methods are not implemented in Hibernate sub-classes). However, you can use JRE 1.6.0 when running Hibernate if desired.

In the extracted hibernate project directory, build Hibernate with Maven.

4 Usage

A few simple steps are necessary to use Hibernate with Informix.

4.1 Informix JDBC Driver

Hibernate 3.3.2 has only been tested with the Informix JDBC driver (ifxjdbc.jar).

4.2 hibernate.cfg.xml

The key values to configure are:

1. db.dialect = org.hibernate.dialect.InformixDialect
2. jdbc.driver = com.informix.jdbc.IfxDriver
3. jdbc.url - host name, port number, database name, INFORMIXSERVER property
 - (a) Consider setting IFX_ISOLATION_LEVEL=1 (dirty read) if appropriate for environment.
4. jdbc.user
5. jdbc.pass