

SPATIAL[™]*net* FM 4.6
Database Version Management

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1. INTRODUCTION

This document describes the Database Version Management implemented for SPATIAL_{net} FM. Typical administrator and other user interaction with the management functions is described and technical details are provided where necessary.

2. OVERVIEW

As new and improved versions of SPATIAL_{net} FM are released, changes to the database schema or contents are often required. Each release of the SPATIAL_{net} FM software is designed to operate with a particular database schema. As a result, an upgrade of SPATIAL_{net} FM often requires both a software update for all users and a database update for each database the users may connect to.

Various tools are provided with SPATIAL_{net} FM to help make sure that the database schema matches the schema required by the software. Database Version Management is one of these tools. All releases of SPATIAL_{net} FM from 4.3 on include a table for storing the SPATIAL_{net} FM database version. SPATIAL_{net} FM maintains this table and adds or removes rows as necessary when new versions of the software are installed.

When the SPATIAL_{net} FM software starts, it checks the current database version to make sure it is compatible with the software. If the version is not compatible, users with 'Supervisor' access will be offered the option of upgrading the database where possible, while other users are warned that continued operation might corrupt the database.

3. INTRODUCTION AND APPLICATION OF DATABASE VERSION MANAGEMENT

Database version management was introduced with SPATIAL_{net} FM 4.4 and supports interactive database upgrades for most versions from SPATIAL_{net} FM 4.2.1.

The interactive upgrade option can only work if the database user making the connection has permission within the database to modify the schema (eg. adding or modifying tables).

In some cases, changes to tables accessed during the user login process require database changes to be applied outside the application using scripts provided.

In this case, scripts must be run using SQL*Plus by a database user having authority to modify the schema within the database.

When upgrading from a version prior to SPATIAL_{net} FM 4.2.1, an error regarding `SCM_USER.USERACCESS` will be received during login. In this case the system administrator can execute the following SQL in SQL*Plus to allow the login to succeed, assuming that the name of the administration user is 'admin':

```
alter table scm_user add ( useraccess numeric (2,0) null );
update scm_user set useraccess=9 where username='admin';
commit;
```

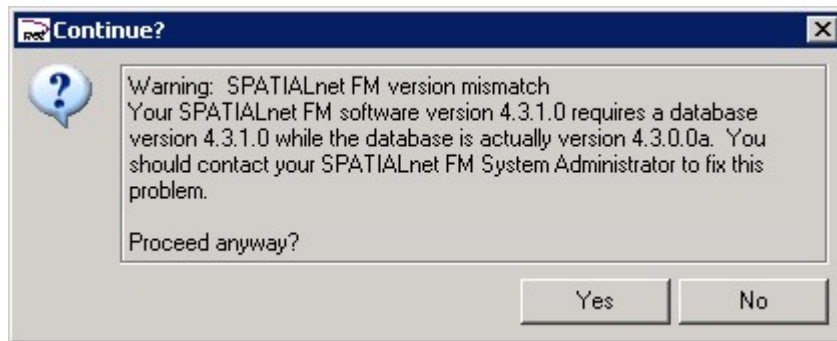
One of the upgrade scripts, which can then be executed as described below, will issue an error that the column just added to the table already exists. This can be ignored.

4. USER INTERACTION

After user login, if the version found in the database matches the database required for the version of SPATIALnet FM software being run, the application will start with no indication to the user of the version checking. If the database version found does not match the required version, or if no database version can be found, the user will be advised after user login but before a job is selected. The available options will depend on the access rights specified for the user.

4.1 Users without 'Supervisor' access

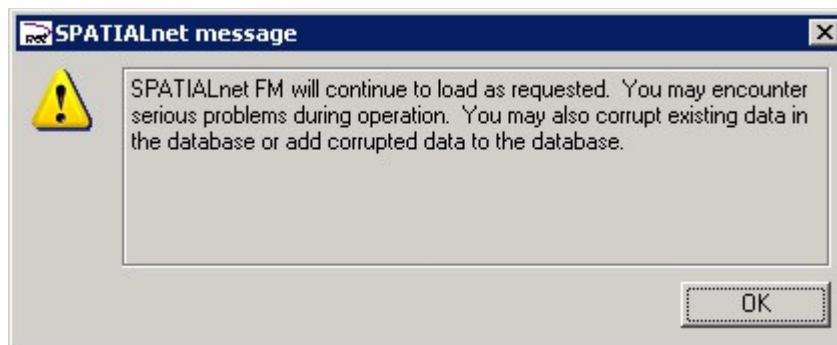
If the database version is found to be different (earlier or later) than the version number required by the software, a panel similar to the following will be displayed:



If the database has no version information stored, the actual database version will be described as '<unknown>'.

If the user presses the 'No' button, the session will end after displaying an error message.

If the user presses the 'Yes' button, another warning will be displayed as shown below.



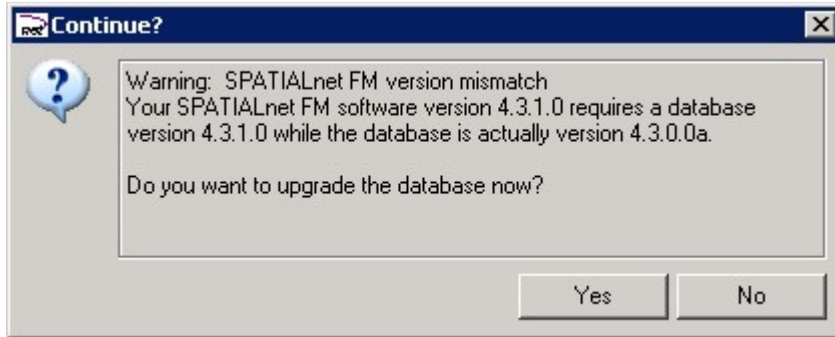
After this warning message is dismissed SPATIALnet FM will continue with ordinary session startup.

Note that this warning is serious. In many cases, the differences in the database schema will cause errors to be displayed, but in some cases data corruption will result. The database should not be used until the version mismatch has been fixed.

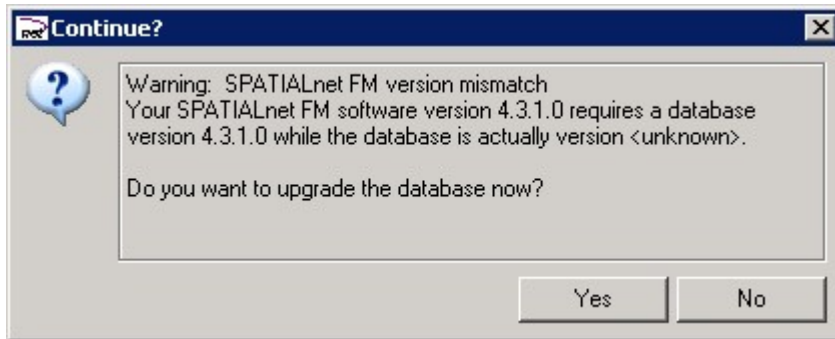
4.2 Users with 'Supervisor' access

If the database version is later than the version required, the warnings described for users without 'Supervisor' access (see the previous section) will be displayed, but the version numbers will indicate that the software requires an earlier database version.

If the database version is earlier than the version number required by the software, a panel similar to the following will be displayed:



If the database has no version information stored, the actual database version will be described as '<unknown>'.



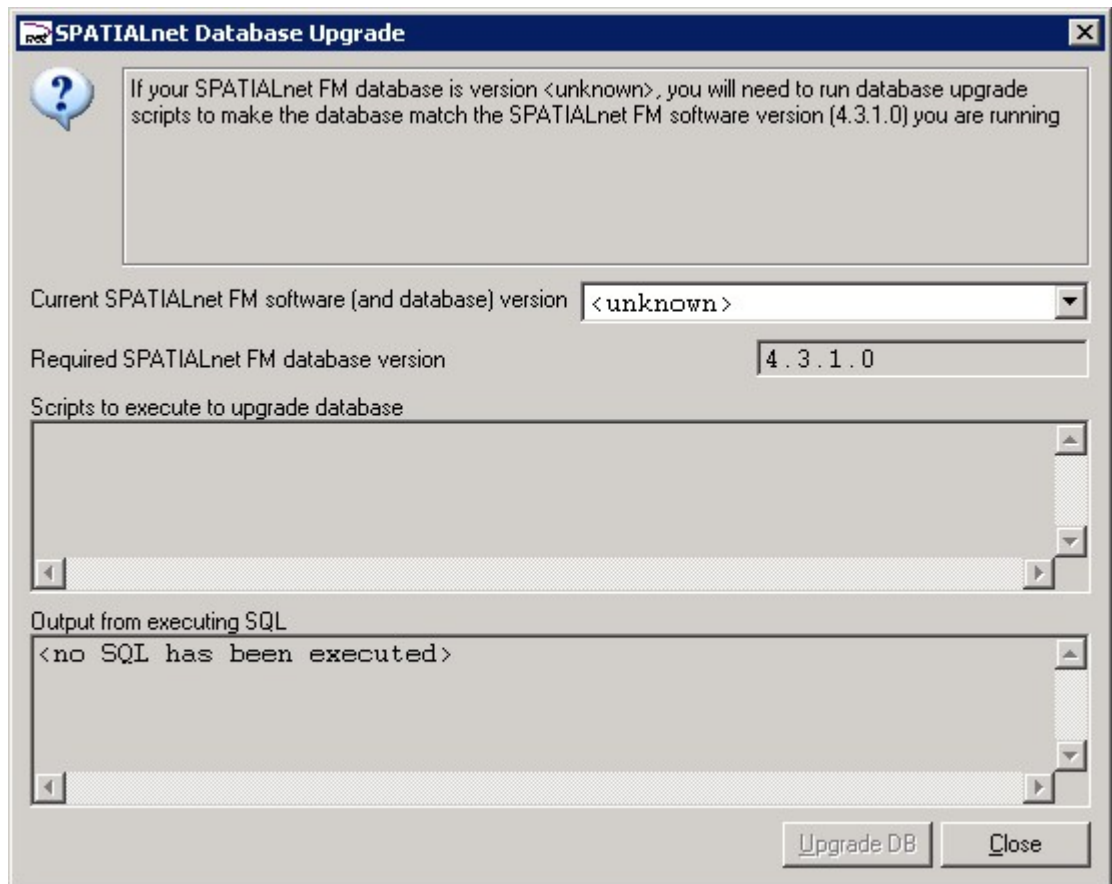
If the user presses the 'No' button, the warning messages described for users without 'Supervisor' access (see the previous section) will be displayed.

If the user presses the 'Yes' button, the upgrade process will begin. **Please note that SPATIALinfo recommends that a complete database backup should always be done before modifying the database.** This database upgrade process is described in the following section.

4.3 Database upgrading

SPATIALinfo recommends a complete database backup be done before upgrading the SPATIALnet FM database.

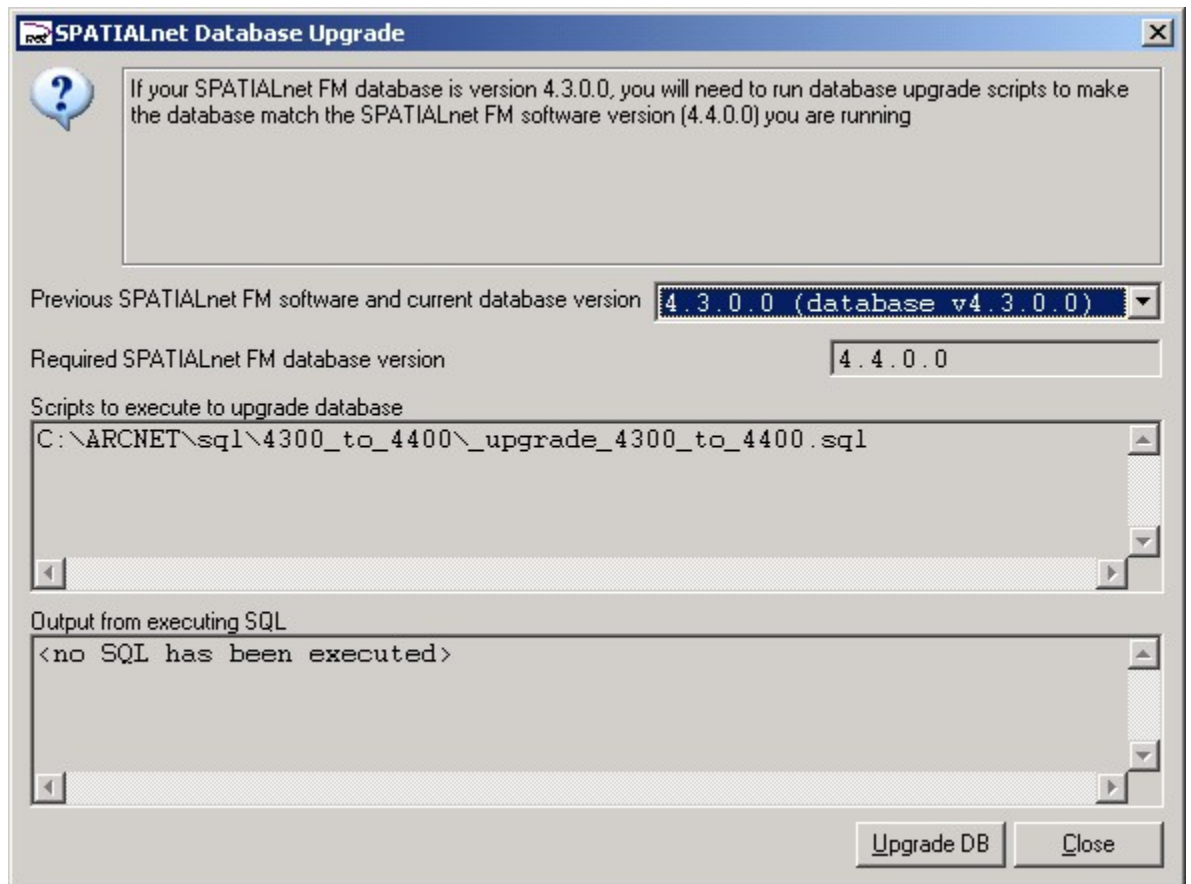
Only users with 'Supervisor' rights can upgrade the database from within the application. An upgrade panel similar to the following will be displayed



If no version information is found in the database, the panel will be displayed as above. Since the current version is not available from the database, the user must provide the necessary information by selecting the previous version of SPATIALnet FM software that was run with this database. The minimum database version required for each software version is shown with the software version in the pulldown and it should be noted that the database version will not always match the software version.

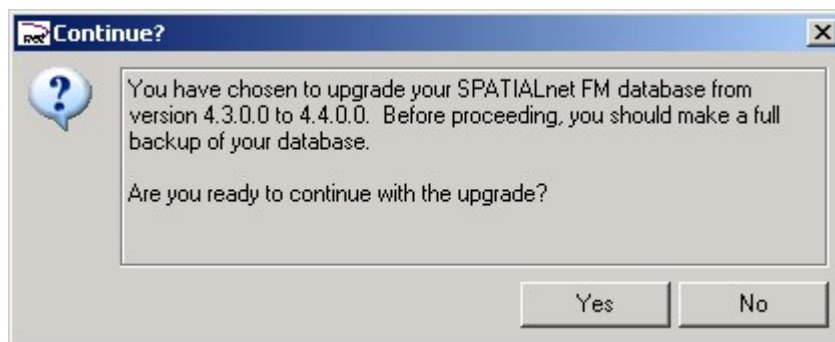
The following screenshot shows an example where the database version was not available from the database. Knowing that the previous software version was SPATIALnet FM 4.3, the user has selected this version from the pulldown and the list of scripts required to upgrade the database is displayed.

If the current version is found in the database, the correct value will be selected in this field (which will not be editable) and a list of the scripts necessary to complete the upgrade will be displayed. In some cases, the software version displayed in the disabled pulldown may not exactly match the software patch level you were previously running. This difference is not important as long as the difference is only in the fourth dot point of the revision which is used as a patch counter. This can happen when patches have been issued which do not require database changes. For example, the SPATIALnet FM software version of 4.2.1.1 runs with a database version of 4.2.1.0 since no database changes were required in the SPATIALnet FM 4.2.1.1 patch.



If the 'Close' button is pressed before the upgrade is complete, the panel is dismissed and the SPATIAL_{net} FM startup will continue, following the steps described above for users without 'Supervisor' access.

If the 'Update DB' button is pressed, a database version table is required to store the database version information. If no database version table exists in the database, the version table must be created. This is described in section 4.3.1. If the table already exists, the software will skip this step and display the following prompt.



Pressing 'No' will close the panel and return to the SPATIAL_{net} Database Upgrade panel.

Pressing 'Yes' will cause SPATIAL_{net} FM to run the necessary scripts to upgrade the database to the required version.

After the scripts have been executed, the current database version pulldown will be updated to show the new database version. This version should match the required version. If the

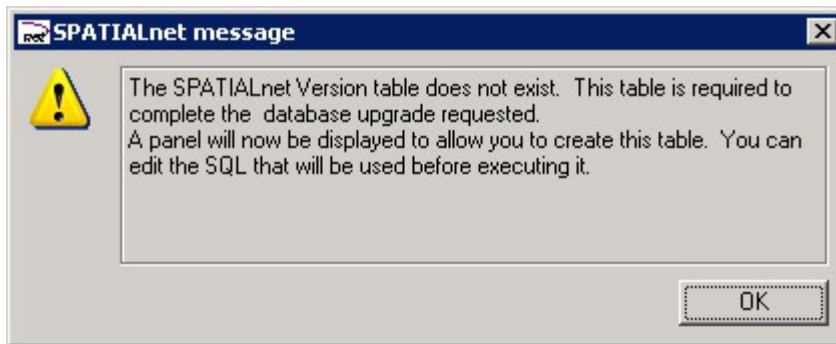
current version is anything other than '<unknown>', the value in the pulldown will no longer be able to be changed. If the current value does not match the current version, then the upgrade has not been successful and the SQL output should be examined to find out what went wrong. If the two versions match, the upgrade has been successful as far as SPATIAL_{net} FM is concerned.

The output from executing the SQL will be displayed in the bottom of the panel and must be reviewed carefully to make sure that no errors have occurred. Look for error messages, including ones such as 'No such file or directory'. If necessary, the text can be copied from this section of the panel. If these messages show that something unexpected has happened during the upgrade, the output can be sent to SPATIAL_{info} along with a screenshot of the panel for analysis.

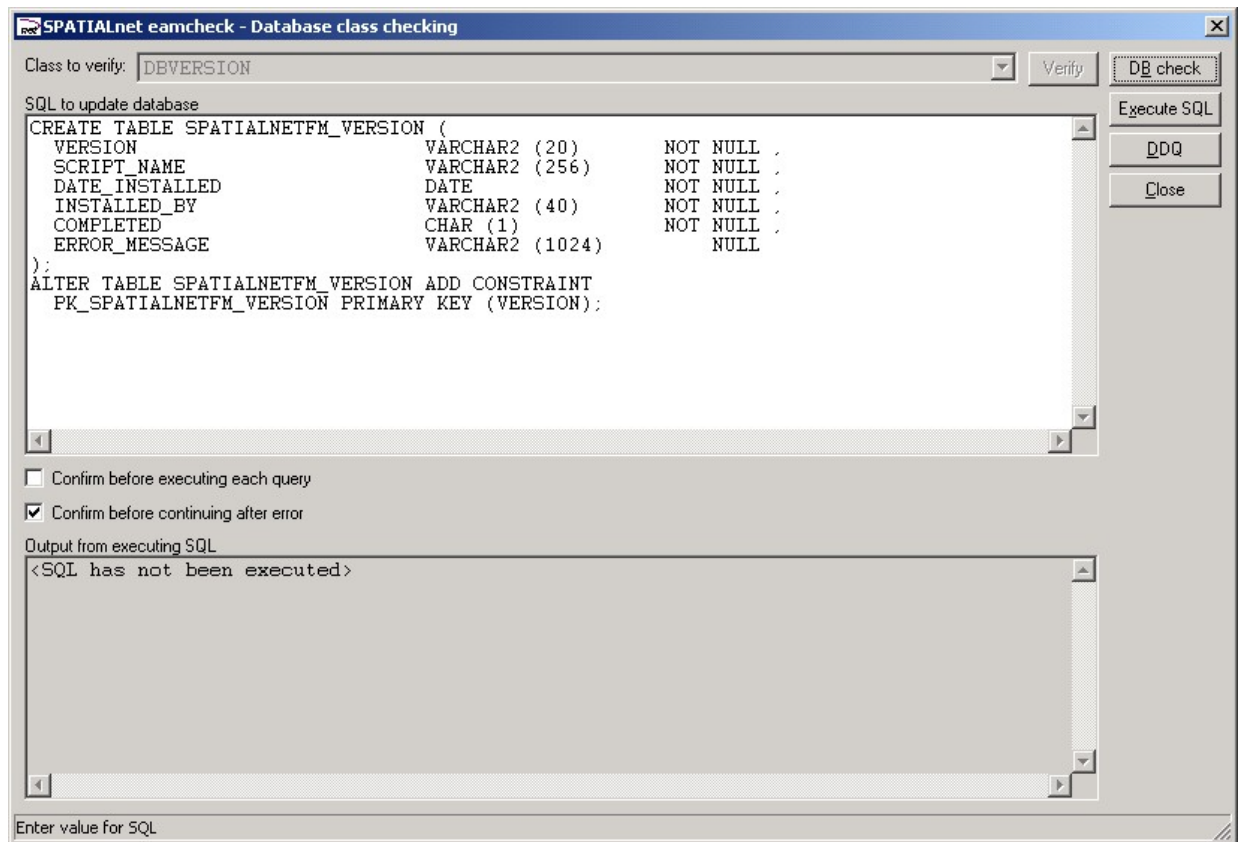
Once you are satisfied that the upgrade has completed satisfactorily, close the panel and the application will continue the session startup process. If the upgrade has not been successful, the process will display the prompts shown for users who do not have 'Supervisor' rights (see section 4.1).

4.3.1 Creating the version table

If the 'Upgrade DB' button on the SPATIAL_{net} Database Upgrade panel is pressed and the version table does not exist in the database or cannot be accessed, a warning is displayed as shown below



Once this is dismissed, the following panel is displayed.



SPATIAL_{net} FM provides the SQL to create the database table used to store the version information. The DDL used can be edited to specify the tablespace or to modify any other parameters used. Do not modify the table structure. To create the table, press the 'Execute SQL' button. The results of executing the commands will be displayed in the bottom section of the panel. After executing this, review the output. If there are no errors, press the 'DB check' button to make sure that SPATIAL_{net} FM can work with the new table. If no SQL is displayed for execution, then no problems have been found and the panel can be closed.