

SPATIALTM*net* FM

Release 5.1

System Administrator's Manual

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Issue History

Issue 1.0		21 Jun 2004
Issue 1.1	Issued for SPATIALnet FM 4.0.0.2	01 Jul 2004
Issue 1.3	Issued for SPATIALnet FM 4.4.0.0	10 Dec 2004
Issue 1.4	Issued for SPATIALnet FM 4.5.0.0	01 Mar 2005
Issue 1.5	Issued for SPATIALnet FM 4.6.0.0	09 Jun 2005
Issue 1.6	Issued for SPATIALnet FM 4.7.0.0	06 Apr 2006
Issue 1.7	Issued for SPATIALnet FM 4.8.1.0	10 Oct 2006
Issue 1.8	Issued for SPATIALnet FM 5.1.0.0	4 Oct 2007

Preface

SPATIALnet FM System Administrator's Manual

The SPATIALnet FM System Administrator's Manual provides guidelines for the preparation and maintenance of SPATIALnet FM installations. Included in this document are descriptions of the various Administrator commands provided with SPATIALnet FM.

Scope

This document describes the requirements for administering a SPATIALnet FM installation. Where possible, it refers to the existing SPATIALnet documentation and only covers areas that are specific to SPATIALnet FM.

This document does not describe the installation of SPATIALnet or the client/server requirements of SPATIALnet. These may be found in the *SPATIALnet Installer's Guide*, the SPATIALnet System Administrator's Manual and the SPATIALnet Oracle Spatial/Locator Driver Notes documents.

Who should use this manual?

This document is provided as a reference for the System Administrator responsible for maintaining and/or supporting the SPATIALnet FM installation.

Prerequisite knowledge

A sound working knowledge of the Oracle Locator/Spatial Relational Database Management System being used in conjunction with SPATIALnet FM. Knowledge of how to use SQL*Net is mandatory when SPATIALnet FM is to be run on a computer other than the Oracle database server.

Definitions and Acronyms

Definition	Meaning
ANSI	American National Standards Institute
DD	The SPATIALnet Data Dictionary
EAM	Entity Abstraction Manager
JMS	Job Management System
MPS	Map Production system
RDBMS	Relational Database Management System

Definition	Meaning
SAM	SPATIALnet Access Manager
SCM	Session Control Manager
SDM	Spatial Data Manager
SQL	Structured Query Language

Related documentation

The following manuals in the SPATIALnet documentation series will be of interest to the SPATIALnet FM System Administrator:

Document name	Description
<i>SPATIALnet Release Notes</i>	This document provides installation and configuration information specific to the accompanying SPATIALnet release. Details of functional enhancements, database changes, fixed problems and known limitations are included in the document.
<i>SPATIALnet Installer's Guide</i>	This document describes how to install SPATIALnet on your system.
<i>SPATIALnet Technical Specification</i>	Includes details of supported platforms and system requirements
<i>SPATIALnet Access Manager User Manual</i>	This document describes the usage and configuration of the SPATIALnet Access Manager for SPATIALnet licensing.
<i>SPATIALnet Oracle Spatial Driver Notes</i>	Includes details of performance optimisations and changes required to use Oracle 9i Locator/Spatial

The following manuals in the SPATIALnet FM documentation series will be of interest to the SPATIALnet FM System Administrator:

Document name	Description
<i>SPATIALnet FM Release Notes</i>	This document provides installation and configuration information specific to the accompanying SPATIALnet FM release.

Document name	Description
	Details of functional enhancements, database changes, fixed problems and known limitations are included in the document.
<i>SPATIALnet FM Database Version Management</i>	This document provides details of the semi-automated database upgrade support provided with SPATIALnet FM.
<i>SPATIALnet FM User's Guide</i>	This document describes the use of SPATIALnet FM.

Conventions used in this manual

Below is a list of the typographical conventions used throughout the text.

Warnings and other important information are shown in a **bold** typeface. Keyboard entries, menu commands and the names of buttons also appear in this typeface.

Angled brackets shown inside a command or name indicate a full or partial path name that is to be supplied by the reader.

Comments and suggestions

We welcome all comments on the software and documentation, and are very interested in suggestions that would help us to enhance the SPATIALnet FM product and its usefulness to you. Please record your comments and send them to your distributor of SPATIALinfo products.

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Chapter 1

Installation of SPATIALnet FM

Installing SPATIALnet FM for the first time

The full process of setting up SPATIALnet FM is straightforward but requires technical competence and familiarity with both the target operating system and RDBMS.

SPATIALnet FM is only supported on the Oracle Locator/Spatial platform.

NOTE: Please refer to the *SPATIALnet Release Notes* and the *SPATIALnet FM Release Notes* for information regarding the hardware and software platforms supported by this product.

The following steps are required to install SPATIALnet FM:

1. Obtain a SPATIALnet licence key from SPATIALinfo.
2. Install the SPATIALnet Access Manager.
3. Create a SPATIALnet FM database. Refer to Chapter 3 for more details
4. Install the Oracle client tools on each computer that is to run SPATIALnet FM.
5. Install a supported version of AutoCAD or AutoCAD Map.
6. Install SPATIALnet FM software from the distribution media onto each computer that is to run SPATIALnet FM.
7. Configure the SPATIALnet Access Manager files on each client (if necessary) to suit your installation.
8. Configure and test the SPATIALnet database connection, customising the SPATIALnet “.ini” files to suit your installation.
9. Verify the installation.
10. Create SPATIALnet FM users.
11. Create SPATIALnet FM dictionary entries - refer to Chapter 3 for more details.

Steps 1 – 4 are covered in the *SPATIALnet System Administrator's Manual*.

Step 5 should be carried out using the documentation provided with the AutoCAD or AutoCAD Map software you will be running (supplied separately).

Step 6 is covered in the *SPATIALnet Installer's Guide*.

Steps 7 – 10 are covered in the *SPATIALnet System Administrator's Manual*.

Step 11 is covered in Chapter 3 of this manual.

Upgrading SPATIALnet FM

The full process of setting up SPATIALnet FM is straightforward but requires technical competence and familiarity with both the target operating system and RDBMS.

NOTE: Please refer to the *SPATIALnet Release Notes* and the *SPATIALnet FM Release Notes* for information regarding hardware and software platforms that are supported by this product and any special upgrade requirements.

With SPATIALnet FM 4.4.0, a semi-automated database upgrade tool was added. The SPATIALnet FM System Administrator has the choice between using the old manual method or the new semi-automatic process which can be used in most cases.

Semi-automated database upgrade process

The semi-automated process can be used to upgrade from all versions after SPATIALnet FM 4.2.1 unless expressly noted in the SPATIALnet FM Release Notes.

The feature simplifies the upgrade process as is shown below.

The following steps are required to install an upgrade to SPATIALnet FM using the semi-automatic database upgrade facility:

1. Obtain a new SPATIALnet licence key from SPATIALinfo if this is necessary and install it in the correct location for the SPATIALnet Access Manager.
Note that the Access Manager service must be restarted to read a new keyfile.
2. Uninstall the previous SPATIALnet FM version.
3. Install the new version of SPATIALnet FM software from the distribution media.
4. Start the application to update the SPATIALnet FM database if necessary.

Step 1 is covered in the *SPATIALnet System Administrator's Manual*.

Step 2 is covered in this manual and the *SPATIALnet FM Release Notes*

Step 3 is covered in the *SPATIALnet Installer's Guide*.

Step 5 includes the database upgrade step which is detailed in the *SPATIALnet FM Database Version Management Manual*

Manual database upgrade process

The manual process used for upgrading SPATIALnet FM in the past can still be used, but will take a little longer to perform.

The following steps are required to install an upgrade to SPATIALnet FM:

1. Obtain a new SPATIALnet licence key from SPATIALinfo if this is necessary and install it in the correct location for the SPATIALnet Access Manager.
Note that the Access Manager service must be restarted to read a new keyfile.
2. Update the SPATIALnet FM database if necessary.
3. Uninstall the previous SPATIALnet FM version.
4. Install the new version of SPATIALnet FM software from the distribution media.
5. Verify the installation.

Step 1 is covered in the *SPATIALnet System Administrator's Manual*.

Step 2 is covered in this manual and the *SPATIALnet FM Release Notes*

Steps 3 and 4 are covered in the *SPATIALnet Installer's Guide*.

Step 5 is covered in the *SPATIALnet System Administrator's Manual* and this manual.

Chapter 2

SPATIALnet FM Naming

Data Dictionary name

SPATIALnet FM is Fiber Management configuration that uses the SPATIALnet data modelling toolkit to provide a full-featured Fiber Management tool.

Modelling information is stored in a compiled SPATIALnet Data Dictionary. For SPATIALnet, this dictionary is call `spatialfm` and the dictionary is installed in the `\dd` directory of the SPATIALnet FM installation.

When referring to some SPATIALnet manuals, some programs will require arguments that include the name of the Data Dictionary. For example, the `jmsadmin` tool requires the name of the SPATIALnet Data Dictionary to read. For SPATIALnet FM, the usage will be:

```
jmsadmin.bat spatialfm <db_ini_name>
```

where `spatialfm` is the specified Data Dictionary for SPATIALnet FM. The second argument is the name of the Database Configuration File described in the next section.

Database Configuration File

Other SPATIALnet programs (such as `eamcheck`) will require a database configuration file. This is specific to each specific installation of SPATIALnet FM and is decided at installation time (although other configuration files may be created at any time). Refer to the *SPATIALnet System Administration Manual* for details of these configuration files.

As an example, refer to the usage of `eamcheck` discussed in Chapter 3 in the section Database schema checking with `eamcheck`.

Tip

It is recommended that the name "spatialfm.ini" be used for this configuration file because several utility batch files (batch queue management, job resetting, etc.) assume this name and will require editing if a different name is used.

Chapter 3

SPATIALnet FM Databases

This chapter gives details for creating, initialising and checking databases.

Database Creation

SPATIALnet FM is provided with two options for creating a database:

1. creating the database from scripts
2. importing an empty database

Creating a database with scripts provided

Various scripts are provided with the SPATIALnet FM installation kit in the `\installer\Config\sql\oraspatial` directory. It is recommended that SPATIALnet FM be installed first, after which these scripts will have been installed in the `\sql\oraspatial` directory of the SPATIALnet FM installation. Depending on where this administration version is installed, the Oracle client tools may also need to be installed so that scripts can be run with SQL*Plus. The use of these scripts to create a new empty database is covered in the *SPATIALnet System Administrator's Guide*.

Some extra scripts must also be run to create a SPATIALnet FM database. These are listed in the following table.

Script name and location	Description
<code>oraspatial\spatialnet_eam.sql</code>	Creates SPATIALNET_EAM package and other supporting objects
<code>oraspatial\spatialnet_jms.sql</code>	Creates SPATIALNET_JMS package and other supporting objects
<code>dictionary\ess_BUILDING_UNION.sql</code>	Creates BUILDING_UNION view
<code>dictionary\ess_BATCH_QUEUE.sql</code>	Create batch queue entry

Importing an empty database

An empty database is included in the SPATIALnet FM installation kit in the "`\sample data`" directory. If this is to be installed, the Oracle import tool `imp` must be used - refer to Oracle user documentation for details. Two dump files were exported using Oracle 9.2.0 (Oracle 9i Release 2) and are called `spatialfm_sample.dmp` and `spatialfm_sample_reco.dmp`. The latter has been loaded with the "recommended" SPATIALnet FM dictionaries (see below).

The automatic upgrade scripts will run when the database is first accessed through *SPATIALnet* FM.

Viewing *SPATIALnet* FM tables from other schemas

The database creation scripts allow the creation of a database that is accessed by different users who do not own the schema object based on grants and roles. There are some simple requirements for use of these facilities with *SPATIALnet* FM and Oracle Locator/Spatial.

SPATIALnet FM requires a populated `USER_SDO_GEOM_METADATA` table for each database user through which *SPATIALnet* FM sessions operate. If a database user is not the owner of the *SPATIALnet* FM schema, the `USER_SDO_GEOM_METADATA` view must still contain the information about the spatial tables that will be accessed.

The following SQL must be run by each database user that is not the owner of a schema containing spatial tables they are to access:

```
■ remove any existing rows from the users spatial metadata
■ (WARNING: assumes this user has no spatial tables of its own)
delete from user_sdo_geom_metadata;
insert into user_sdo_geom_metadata (TABLE_NAME, COLUMN_NAME,
DIMINFO, SRID) (select TABLE_NAME, COLUMN_NAME, DIMINFO, SRID
from all_sdo_geom_metadata where owner = '<schema_owner>');
commit;
```

This allows *SPATIALnet* FM to find the extent of the spatial columns. Note that this needs to be kept up to date. In some *SPATIALnet* FM software upgrades new spatial tables are added or removed. The SQL above must be run again.

Likewise, if the schema owner changes the extent of any geometry columns, all users that view the schema must update their `USER_SDO_GEOM_METADATA` view to reflect the new extents. This is not expected to be a common occurrence.

Initialising *SPATIALnet* FM database

SPATIALnet requires some additional database objects and initialising of dictionaries. These are detailed below.

Initialising *SPATIALnet* FM dictionaries

Before using *SPATIALnet* FM for the first time, certain dictionaries of equipment types must be initialised.

Several scripts are included to initialise the dictionaries and to serve as examples of how the dictionaries can be populated by the System Administrator if this is required. These scripts are to be run after the database has been created, but before *SPATIALnet* FM is used.

The following scripts are included in the \sql directory of the SPATIALnet FM installation:

Dictionary name	Essential Rows	Recommended Rows
ALL LAYERS	ess TRIGGERS.sql	
ANC TYPES	ess ANC TYPES.sql	
ATTRIBUTE_MAPPING	populated by other scripts including ess_LHS_ANNO_TYPES.sql ess NH ANNO TYPES.sql	populated by other scripts including reco_BUILDING_DICT.sql reco_POLE_ATTRIBUTES_DICT.sql
BOUNDARY_DICT		reco_BOUNDARY_DICT.sql
BUILDING_DICT		reco_BUILDING_DICT.sql
CABLE_DICT		reco_CABLE_DICT.sql
CABLE_LAYER_DICT		
CIRCUIT_STATE_DICT	ess CIRCUIT_STATE_DICT.sql	reco_CIRCUIT_STATE_DICT.sql
COLOUR_DICT	ess COLOUR_DICT.sql	
CONSTRUCTION_STATUS_DICT		reco_CONSTRUCTION_STATUS_DICT.sql
COPPER_CABLE_DICT		reco_COPPER_CABLE_DICT.sql
COPPER_CABLE_LAYER_DICT		
COPPER_CROSS_CONNECT_DICT		reco_COPPER_CROSS_CONNECT_DICT.sql
COPPER_INLINE_EQUIP_DICT		reco_COPPER_INLINE_EQUIP_DICT.sql
COPPER_SPLICE_CASE_DICT		reco_COPPER_SPLICE_CASE_DICT.sql
COPPER_TAP_BOX_DICT		reco_COPPER_TAP_BOX_DICT.sql
COPPER_TERM_BLOCK_DICT		reco_COPPER_TERM_BLOCK_DICT.sql
COUPLER_DICT		
COUPLER_PORT_MAPPING_DICT		
COUPLER_PORT_DICT		
CUSTOMER_DICT	ess CUSTOMER_DICT.sql	
DESIGN_DICT	ess DESIGN_DICT.sql	reco_DESIGN_DICT.sql.sql
DROP_TYPES	ess DROP_TYPES.sql	
ED_PORT_CONNECTIONS		
ED_PORT_INFORMATION		
EQDICT		
FIBER_GLASS_DICT	ess FIBER_GLASS_DICT.sql	reco_FIBER_GLASS_DICT.sql
INTERFACE_DICT	ess INTERFACE_DICT.sql	
ISP_PORT_STATE_DICT		
JOB_DICT	ess JOB_DICT.sql	
LESANNO_DICT	ess LESANNO_DICT.sql	
LESANNOCONTENT_DICT	ess LESANNOCONTENT_DICT.sql	
LHS_ANNO_TYPES	ess LHS_ANNO_TYPES.sql	
LHS_FAMILYYS	ess LHS_FAMILYYS.sql	
LHS_TYPES	ess LHS_TYPES.sql	
MISC_DICT	ess MISC_DICT.sql	
NH_ANNO_TYPES	ess NH_ANNO_TYPES.sql	
NH_BOUNDARY_DICT		
NH_TYPES	ess NH_TYPES.sql	
NODEANNO_DICT	ess NODEANNO_DICT.sql	
NODEANNOCONTENT_DICT	ess NODEANNOCONTENT_DICT.sql	
NODE_RX_DICT		reco_NODE_RX_DICT.sql
PARCEL_DICT		reco_PARCEL_DICT.sql
PLANTOWNER_DICT		
PORT_DICT		reco_PORT_DICT.sql
PORT_MAPPING_DICT		
RF_AMP_DICT		
RF_ANNO_BLOCK_DICT		reco_RF_ANNO_BLOCK_DICT.sql
RF_CABLE_DICT		

RF FREQUENCY DICT	ess RF FREQUENCY DICT.sql	
RF HFC NODE DICT		
RF PASSIVE DICT		
RF PORT FREQ FREQ DICT		
RF PORT LOSS DICT		
RF POWER DICT		
RF PROFILE NAME DICT		
RF PROFILE EQLIST DICT		
RF SUBEQ DICT		
RF SYSTEM TYPE DICT		reco RF SYSTEM TYPE DICT.sql
RF SYSTEM TYPE DICT		
RF TAP DICT		
RF TAP LOSS DICT		reco RF TAP LOSS DICT.sql
ROAD DICT		reco ROAD DICT.sql
SERVICE STATUS DICT		reco SERVICE STATUS.sql
SERVICE TYPE DICT	ess SERVICE TYPE DICT.sql	
SITE DICT	ess SITE DICT.sql	
SLOT STATE DICT	ess SLOT STATE DICT.sql	reco SLOT STATE DICT.sql
SPATIALNET CS SRS		reco SPATIALNET CS SRS.sql
SPLICE CASE DICT		reco SPLICE CASE DICT.sql
SPLICE TRAY DICT		reco SPLICE TRAY DICT.sql
STRAND DUCT RADIUS	strand duct radius.sql	
TAP BOX DICT		reco TAP BOX DICT.sql
TERM RACK DICT		reco TERM RACK DICT.sql
TERM SHELF DICT		
UNIT DICT	ess UNIT DICT.sql	
USER DICT	ess USER DICT.sql	
SPATIALNETFM VERSION	ess VERSIONS.sql	
	all_ess.sql (runs all essential scripts including those mentioned in the table above)	all_reco.sql (runs all recommended scripts except reco_POLE_ATTRIBUTES.sql and reco_SPATIALNET_CS_SRS.sql)

Refer to the *SPATIALnet FM User Manual* for more details about maintaining equipment dictionaries.

Database schema checking with eamcheck

The *SPATIALnet FM* Data Dictionary describes various items in the database schema that are required for *SPATIALnet FM* to work correctly. After initial database creation, or software upgrades, the schema should be checked. The *eamcheck* utility is provided to check that the database schema matches the *SPATIALnet FM* Data Dictionary.

To verify the database schema, run the *eamcheck.exe* in a Windows command prompt for each *SPATIALnet FM* database. Note that this does not need to be run on each client, but once for each database.

Install *SPATIALnet FM* 5.1 on the computer from which *eamcheck* is to be run. This must be done before *eamcheck* can be run since *eamcheck* requires a *SPATIALnet* Data Dictionary against which to verify the database schema.

The executable *eamcheck.exe* is provided in the `\tools` directory of the System Administrator's CD and should be copied to the `\bin` directory of the *SPATIALnet FM* installation.

```
eamcheck.exe -C<dbms_config_file> -D<DDname> -S<outfileprefix>
```

where

<dbms_config_file>	is replaced by the name of the database configuration file being used to log in
<DDname>	is replaced by the name of the SPATIALnet data dictionary being used - for SPATIALnet FM this is <code>spatialfm</code> and if the DBMS configuration file includes a <code>DATADICTIONARY=spatialfm</code> entry, this argument is not required.
<outfileprefix>	is replaced by the file name to use for storing output. Any SQL that should be executed to make the database schema match the DD schema will be written to a file named <code><outfileprefix>.SQL</code>

Thus for ordinary operation with SPATIALnet FM, the command is:

```
eamcheck.exe -C<dbms_config_file> -S<outfileprefix>
```

If any warnings are displayed during execution of `eamcheck`, examine the output carefully to see whether it indicates that the problem cannot be fixed automatically. If the problem cannot be fixed automatically, it may need to be fixed manually or by an export/import method. If a SQL script is generated to fix the problems identified, examine the script carefully to ensure that the changes to be made will not affect other items in the database that have been configured independently of SPATIALnet. Take particular care with anything that involves dropping tables, columns or constraints.

Graphical eamcheck

SPATIALnet FM also provides a simple panel that gives the same functionality as `eamcheck` as long as user login to SPATIALnet FM is possible. This requires the `SCM_USER` table to be useable and to contain a valid user. A batch file **`eamcheckg.bat`** is provided in the `\bin` directory of the SPATIALnet FM installation, which is accessible by typing the following line at the Windows command prompt, or by creating a shortcut to the command on the desktop:

```
eamcheckg.bat <db_ini_name>
```

Chapter 4

JMS Batch Queue

Job Management System

The *Job Management System* (JMS) is a component of SPATIALnet that has been provided to support workflow management through the concept of private jobs and workflow operations such as create, publish, post, cancel and undo. After a job has been created, work can be done in the job to add, modify or delete equipment. These changes are invisible to other users until the job is published. Once the field work for a job is completed, the job is posted and the changes, modifications or deletions become the installed status of the equipment.

With SPATIALnet FM, the updating of the spatial database with posted and published jobs is carried out as a batch queue process.

Creating the Batch Queue

SPATIALnet FM provides a script for creating a batch queue in a SPATIALnet FM database if none exists. The script is found in the `\sql` directory of the SPATIALnet FM installation and is called `batch_queue.sql`. It attempts to create a batch queue that processes jobs between 8pm and 6:30am. Refer to the SPATIALnet System Administration Manual for details of queue configuration.

If the script is run more than once, errors will be displayed but no damage can be done.

NOTE: The processing of a batch queue must never be scheduled while there are open jobs in the database. Make sure that batch queue processing times that are outside the hours of database access.

Running the Batch Queue

SPATIALnet FM provides a script for running the JMS batch queue on a computer with SPATIALnet FM installed. The script is found in the `\bin` directory of the SPATIALnet FM installation and is called `batch.bat`. It attempts to start the batch queue created in the previous section. Refer to the SPATIALnet System Administration Manual for details of queue operation.

The queue can be left running all the time, but requests will only be processed between the specified start and end times.

SPATIALnet FM also provides a script for running the JMS batch queue in single run mode where the queue is stopped at the end of the job processing time. The script is found in the `\bin` directory of the SPATIALnet FM installation and is called `singlerunbatch.bat`. It attempts to

start the batch queue created in the previous section. Refer to the *SPATIALnet* System Administration Manual for details of queue operation.

Both of the scripts referred to above assume a database configuration file name of **spatialfm.ini**. It is recommended that this file name be used if these scripts are to be used.

NOTES:

- 1) **The batch queue must be started on a machine configured to run *SPATIALnet*. The batch queue process does not have to be left running outside the period over which job processing takes place. However, under normal circumstances the queue can be left running for a long period and should therefore be set up to run on a machine located in a secure environment.**
- 2) **Database backups or other database work may take the database off line. If this occurs, the connection between the batch queue and the database will be lost and no further processing of jobs will take place. Stop the batch queue, reset it and restart it to begin processing jobs again.**

Resetting the batch queue

A batch file **resetbatch.bat** is provided in the `\bin` directory of your *SPATIALnet* FM installation. This script contains the basic command required to reset the JMS batch queue. It assumes your database configuration file will be called **spatialfm.ini**. If this is not the case, you will need to edit the file to change the name.

The JMS Administration Tool

NOTE: The batch queue does not need to be running in order to use the JMS Administration tool.

A tool for submitting jobs to the JMS batch queue is distributed with *SPATIALnet*. It is accessible by typing the following line at the Windows command prompt, or by creating a shortcut to the command on the desktop:

```
jmsadmin.bat spatialfm <db_ini_name>
```

Resetting jobs

If a *SPATIALnet* session crashes, or there is a need to add extra work to a job after it has been posted, the job can be reset so that it can be opened in *SPATIALnet* FM. A Reset button is provided on the job selection panel and this can be used if a *SPATIALnet* session has crashed or could not close down properly. However, posted and cancelled jobs will not appear in the list of jobs at login time and must be reset manually. For this, a batch file is provided which displays a panel containing all the jobs owned by the user. It is accessible by typing the following line at the Windows command prompt, or by creating a shortcut to the command on the desktop:

```
jobs.bat spatialfm <db_ini_name>
```