About this database

Sms4Domino is an application that delivers SMS (short messaging service) capabilities to Domino applications. End users send and receive SMS messages the same way as they send and receive e-mail messages.

The application is fully integrated in the Domino environment. Domino administrators will feel at ease when configuring and monitoring the application.

The application performs all processing in Lotus Domino databases. There is no need for additional servers or specialised skill sets.

Sms4Domino consists of one or more Lotus Domino databases. In small environments the databases may be combined into one single database.

- Configuration database (.nsf) that defines the gateways to the GSM network, the interfaces that generate SMS requests, the license, the configuration of the logging, and all required parameters.
- Accounting database (.nsf) where historical data is stored. Accounting records may be used to restrict people from sending SMS messages.
- SMS mailbox databases. The Domino router stores SMS requests into this database. Sms4Domino polls the database, converts the requests into SMS messages and transmits them via one of the defined gateways.
- Sms4Domino run time program. This Java program may run as a Domino server add-in on a Windows based Domino server or as a standalone program on a workstation on which Lotus Notes has been installed.

Sms4Domino is build as a Java program on top of different well known open source packages:

- smslib: Java toolkit for sending and receiving Sms messages (http://smslib.org)
- log4j: Java logging framework (http://logging.apache.org/log4j/1.2/)
- JAddin: Java toolkit for Domino Add-In Server tasks (http://abdata.ch/JAddIn.html)
- libphonenumber: Google's phone number handling library, powering Android and more (http://code.google.com/p/libphonenumber)

The open source packages are distributed under the terms of the Apache V2 license. The code and the licensing terms are stored in the Sms4Domino template.

SMS messages are sent via one or more GSM modems connected to the server or workstations. We strongly recommend using industrial grade modems connected via a serial COM port. (Only the Cinterion MC55iT modem is supported).

Sms4Domino has been developed on a Domino 8.5 platform on Windows. The program depends on the Java run time environment supplied with Domino or Notes. This must be at least version ....

Please visit us at http://www.sms4domino.eu for more information. All your feedback is welcome.

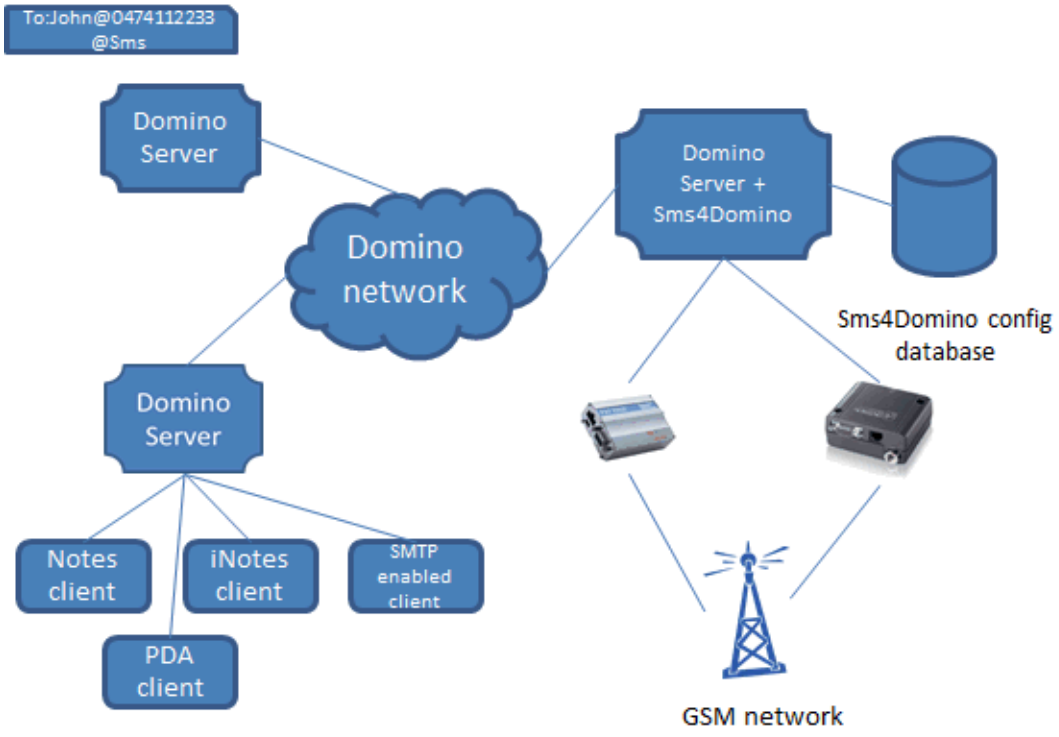
Revision history

The version of the software is printed when the application is started.

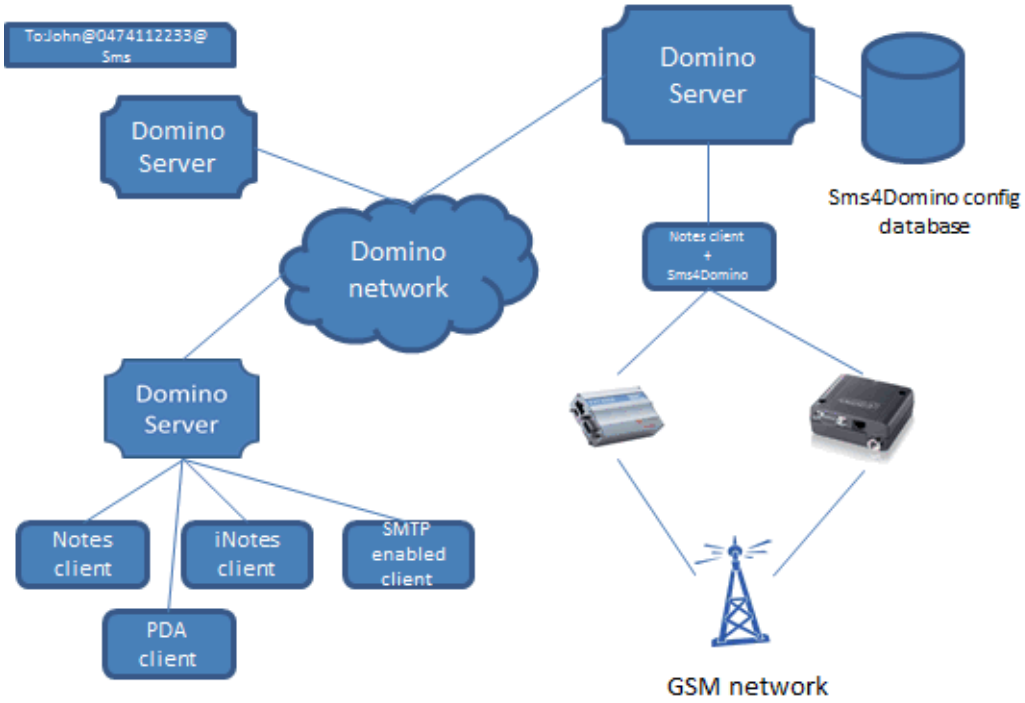
Version	Description
1.0 (March 2012)	- Initial production release ● Inbound and outbound SMS messages ● Inbound routing via fixed routing or auto matching ● Restrictions on allowed destination phone numbers ● Content of outbound SMS message may be changed at run-time via @formula ● For use with Cinterion MC55iT GSM Quad Band Modem
0.1 (January 2012)	- Initial internal release ● Only outbound SMS messages

System architecture

Sms4Domino integrates in any Domino infrastructure. Following drawing illustrates the architecture when Sms4Domino is running as a server addin. Typically the configuration database and Sms4Domino are located on the same server. One or more modems are connected via COM ports to the Domino server. End users and systems may send mail from different kind of workstations anywhere in the network. Domino will route the mail to Sms4Domino.



As an alternative Sms4Domino may run on a Windows workstation. The modems are connected to the COM ports of the workstation. The configuration database resides on any of the Domino servers.


To:John@0474112233@Sms
Domino Server
Domino Server
Domino network
Sms4Domino config database
Notes client + Sms4Domino
Domino Server
Notes client
iNotes client
SMTP enabled client
PDA client
GSM network

Limitations of this release

Some features that are described in the help file or on the configuration settings have not yet been implemented.

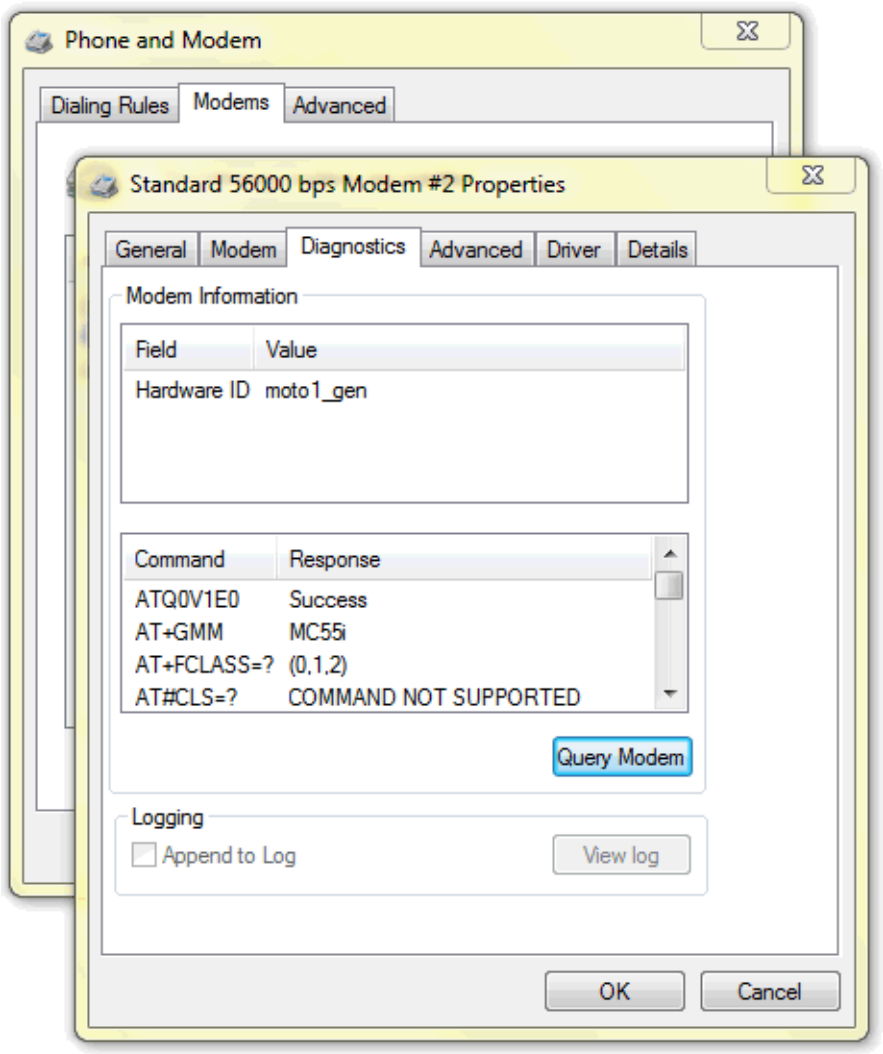
- Sms4Domino may be rolled-out as a multi-database application (configuration database, accounting database, ...). In the current release all Sms4Domino features must be part of a single database.
- Not all Interface families have been implemented. In the current release requests for sending a SMS must be mailed to Sms4Domino.
- Only one Notes Mail Interface may be defined. This implies that there is only one foreign domain document related to SMS messages. (Of course is is possible to run multiple instances of Sms4Domino on different machines, each using a dedicated configuration database)
- Not all gateway families that are supported by SmsLib are available for being used by Sms4Domino. Currently we recommend connecting an industrial modem via a serial cable to a COM port. Multiple modems may be connected to the same machine. All modems must be connected to the machine where Sms4Domino is running.

30 minute installation guide

The installation should be straightforward for a Lotus Domino system administrator.

Before you begin

- Acquire one or more industrial grade GSM modems (e.g. Cinterion MC55iT) and a SIM card. (During the development of Sms4Domino we tested many different modems. Although they should all implement the same set of AT commands we have experienced subtle differences in the way this is done. Sms4Domino support for modem related issues is therefore available for this modem only.)
- Connect the modem(s) to the serial port(s) on the computer. Consider installing a PC card with multiple serial ports. (It is also possible to connect the modem, via a serial-to-ethernet convertor, directly to the LAN. This setup is documented in a separate help document)
- Test the communications between the PC and the GSM modems. Windows provides some basic test tools.



- Prepare the modem for use with Sms4Domino.
- Decide on the architecture. Sms4Domino may run as a Domino server add-in (started via RunJava) or as a standalone program on a PC where Lotus Notes clients has been installed.

Installation steps

This document contains only a checklist of all installation steps. More information is available in subsequent documents.

1. Obtain a copy of the Sms4Domino template. Sign the template with a proper user id.
2. Create a configuration database on a Domino server. (The database must always reside on a server - not on a workstation). Adjust the ACL settings.
3. Extract the dll and jar files from the configuration database and install them in the appropriate directories on the server or workstation where Sms4Domino will be running.
4. Add some mandatory parameters to the notes.ini of the server or workstation where Sms4Domino will be running.
5. Define the basic parameters in the application profile of the configuration database.
6. Create and configure gateway documents. Every transmission path to the GSM network requires a gateway document.
7. Create and configure interface documents. Each source of SMS requests requires an interface document. Domino mail interfaces may receive the Domino mails in the configuration database or in a separate database. In all cases it is the most practical to base the databases on the Sms4Domino template.
8. Create and configure a license document. Obtain a valid license file from Sms4Domino and copy the contents of the file into the license document.
9. Create and configure logging documents. Logging is based on the Apache log4J software. Logging may be very tearse of verbose. Output of the logging may be directed to the Domino log.nsf or to a Windows file.
10. Define a foreign domain in the Domino directory. Notes users will address mails to John@3618319@sms or to 3618319@sms for sending a SMS message to this number. De mailbox of the foreign domain points to the Sms4Domino control database or another database that has been defined in the interface document.
11. Start the Sms4Domino program.

The system is now ready to be used. The administrator should

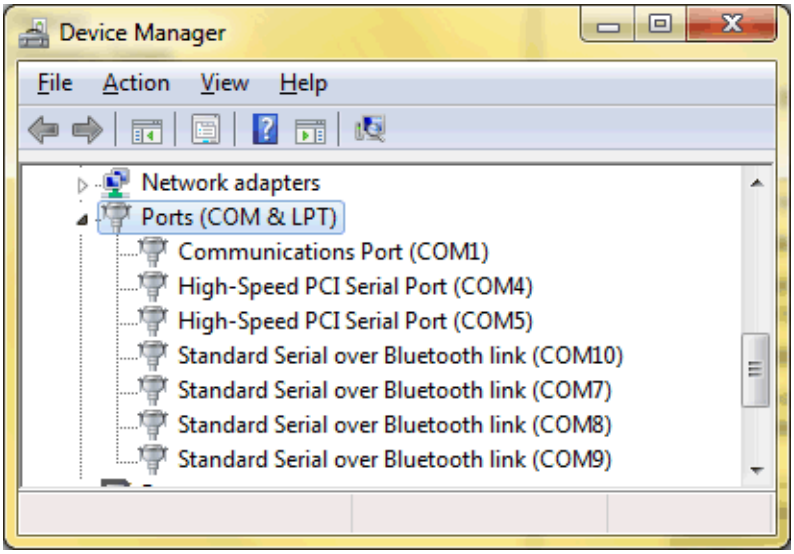
- Monitor the system.
- Perform maintenance actions.

Choice and installation of the modem

Sms4Domino is running on top of SmsLib. This software is responsible for the communication with the modem. SmsLib supports different kind and models of modems like a USB connected GSM, an industrial modem connected via a serial COM port, a modem directly connected to the LAN or a SMS service provider like Clickatel.

In the current release Sms4Domino only supports a local or LAN connected modem. We recommend using an industrial grade modem connected to a serial port (not via USB, bluetooth or infrared). During testing we have noticed that not all modems are equal. They may behave in unexpected ways under certain conditions. In order to receive support for modem related questions you should use the Cinterion MC 55iT modem (http://www.cinterion.com). In case the modem must be connected to the LAN we recommend the use of the ABLELink Ethernet Serial Server (Atop technologies - http://www.atop.com.tw)

Modern PCs have no are only one COM port. It may be necessary to install an expansion board providing one, two or more additional COM ports. These cards come mostly with driver software. After a successfull installation the COM ports must be visible in the Windows device manager



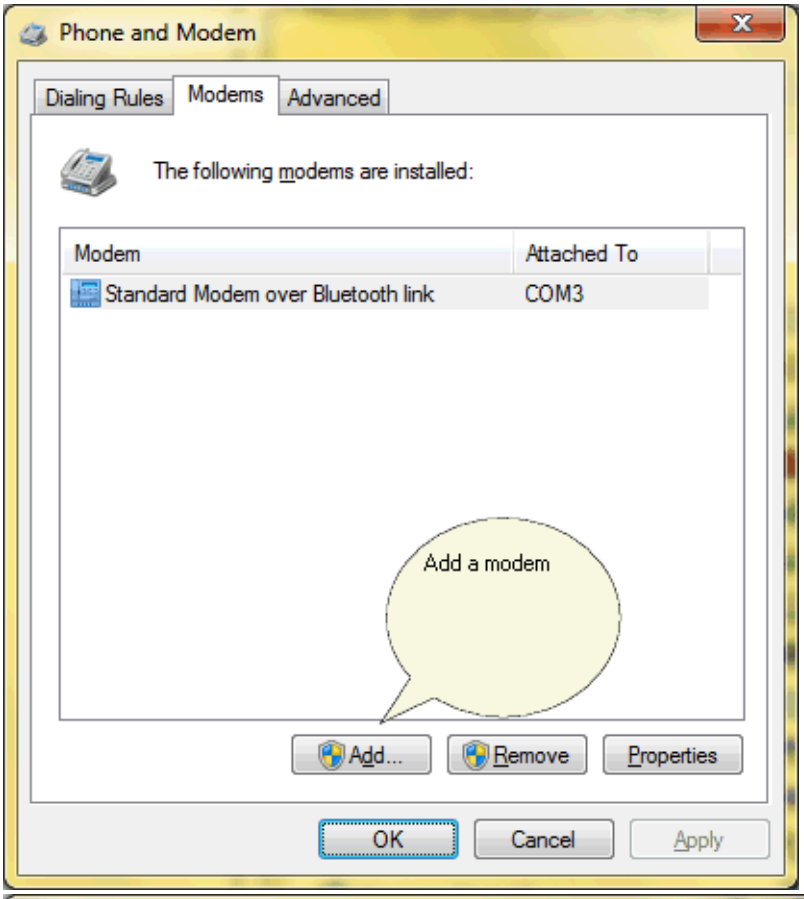
After this verification it is possible to connect the modem to the COM port. Read the documentation supplied with the modem. You must know the communication speed and parameters between the PC and the modem. Sms4Domino will communicate with the modem at a configurable speed. However Sms4Domino will communicate with following settings

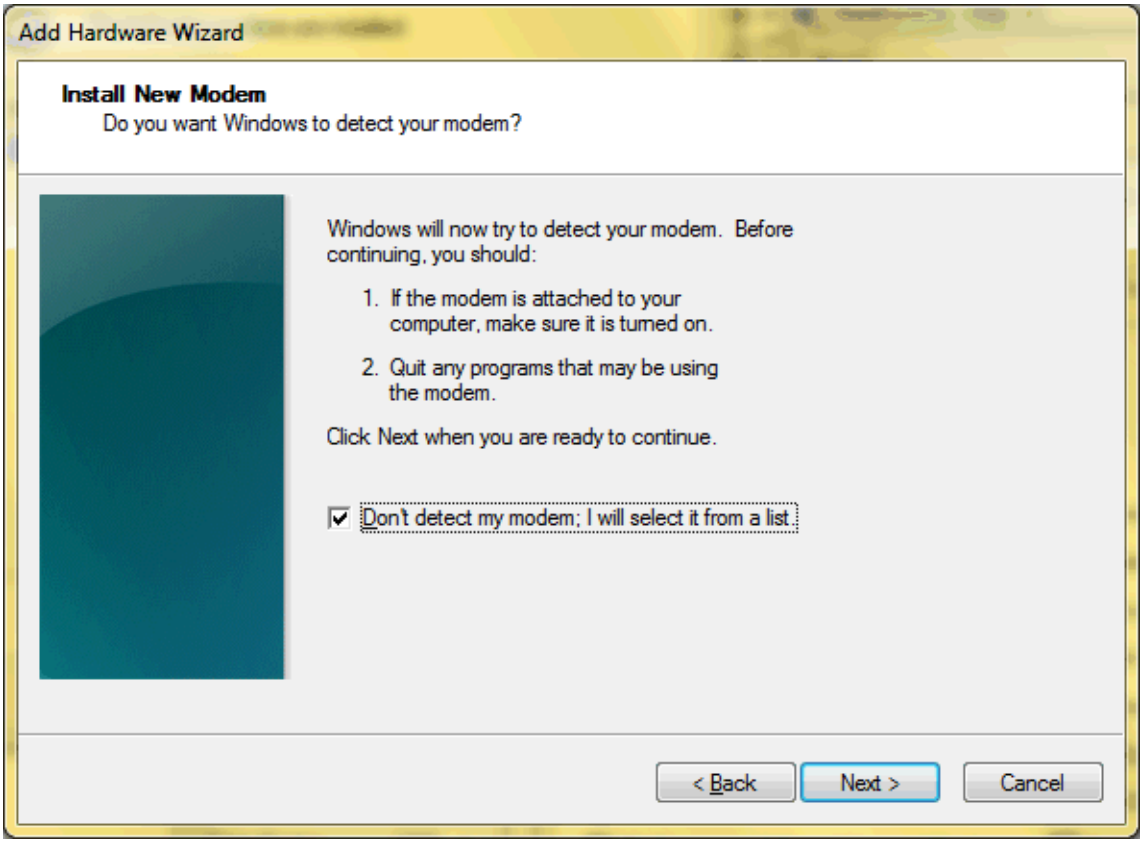
- Speed: defined in the gateway document. Modems operate either at a fixed bit rate or may recognize automatically the bit rate being used. This auto bit rate recognition feature does not work if the speed is too high or too low. Consult the documentation supplied with the modem.
- 8 databits
- 1 stop bit
- no parity bit
- Flow control based on RTS and CTS

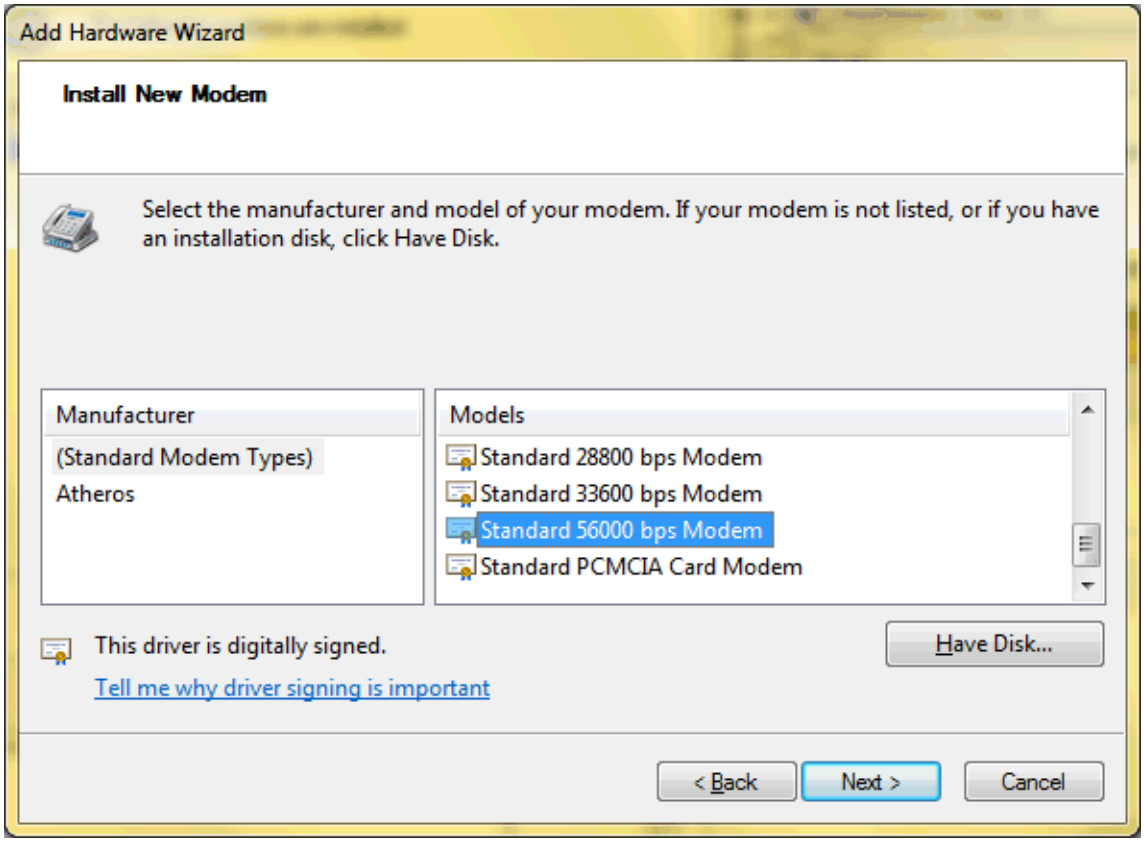
When the modem is connected to the PC it is recommended to perform some basic communication tests. There are different ways for doing this. We explain a few of them.

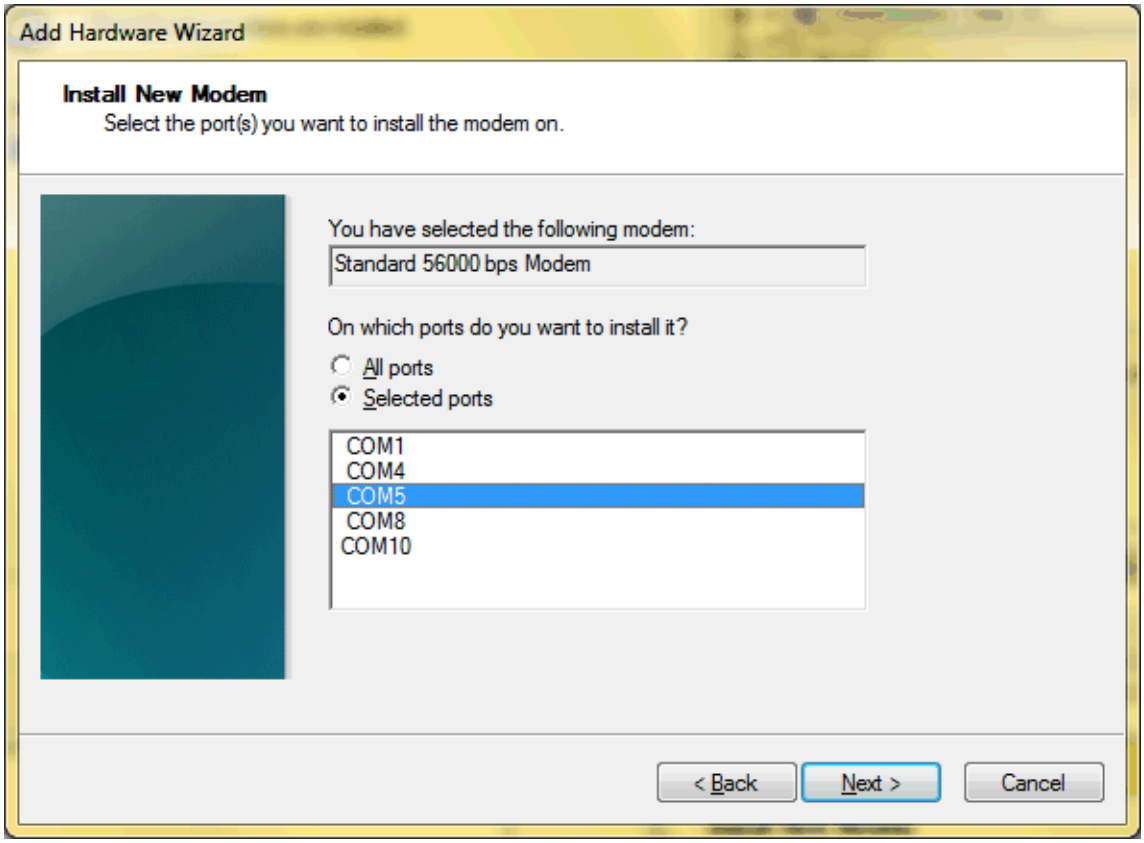
Windows modem test

Open the Windows control panel. Click on *Phone and modems.* Add a generic modem to the COM port (COM5 in the print screen)

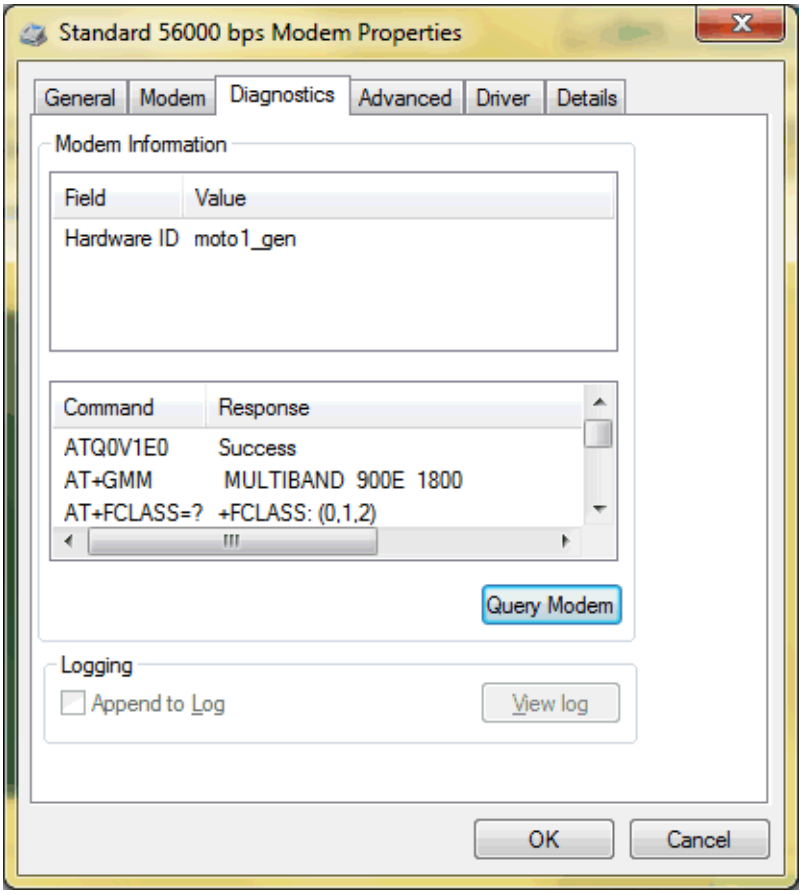

Phone and Modem
Dialing Rules
Modems
Advanced
The following modems are installed:
Modem
Attached To
Standard Modem over Bluetooth link
COM3
Add a modem
Add...
Remove
Properties
OK
Cancel
Apply


Add Hardware Wizard
Install New Modem
Do you want Windows to detect your modem?
Windows will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel



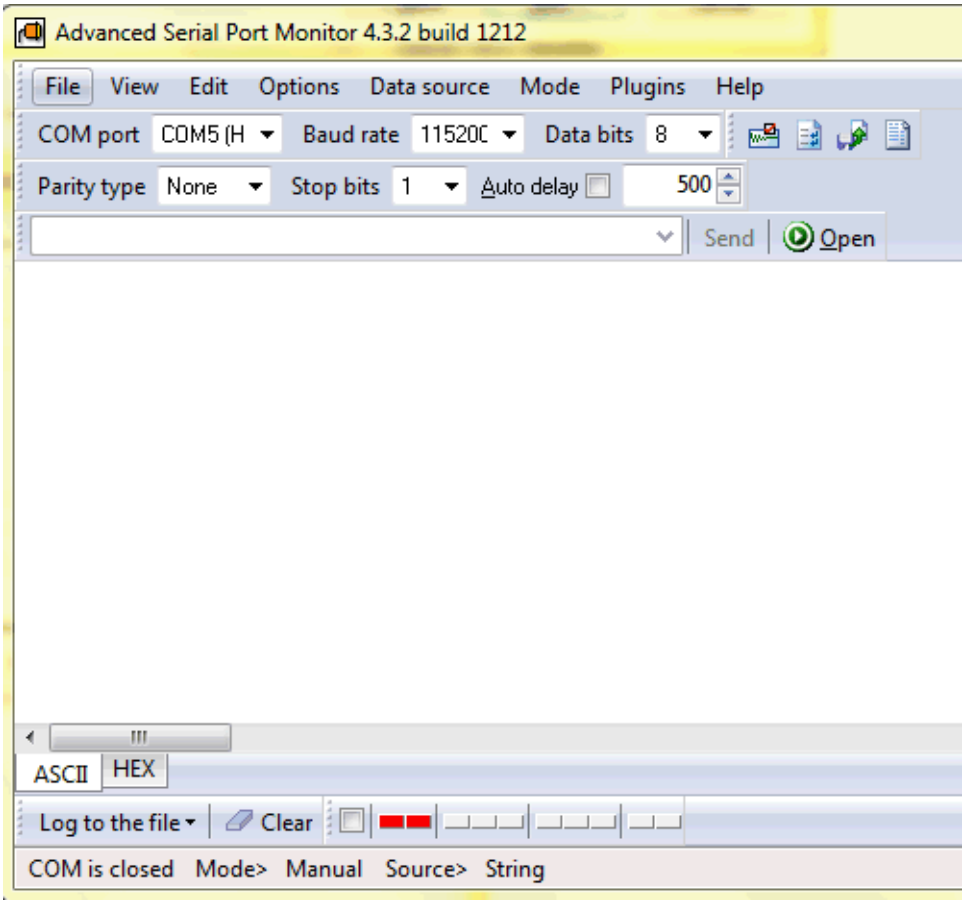


The modem may be tested via the query tool under the Diagnostics tab .



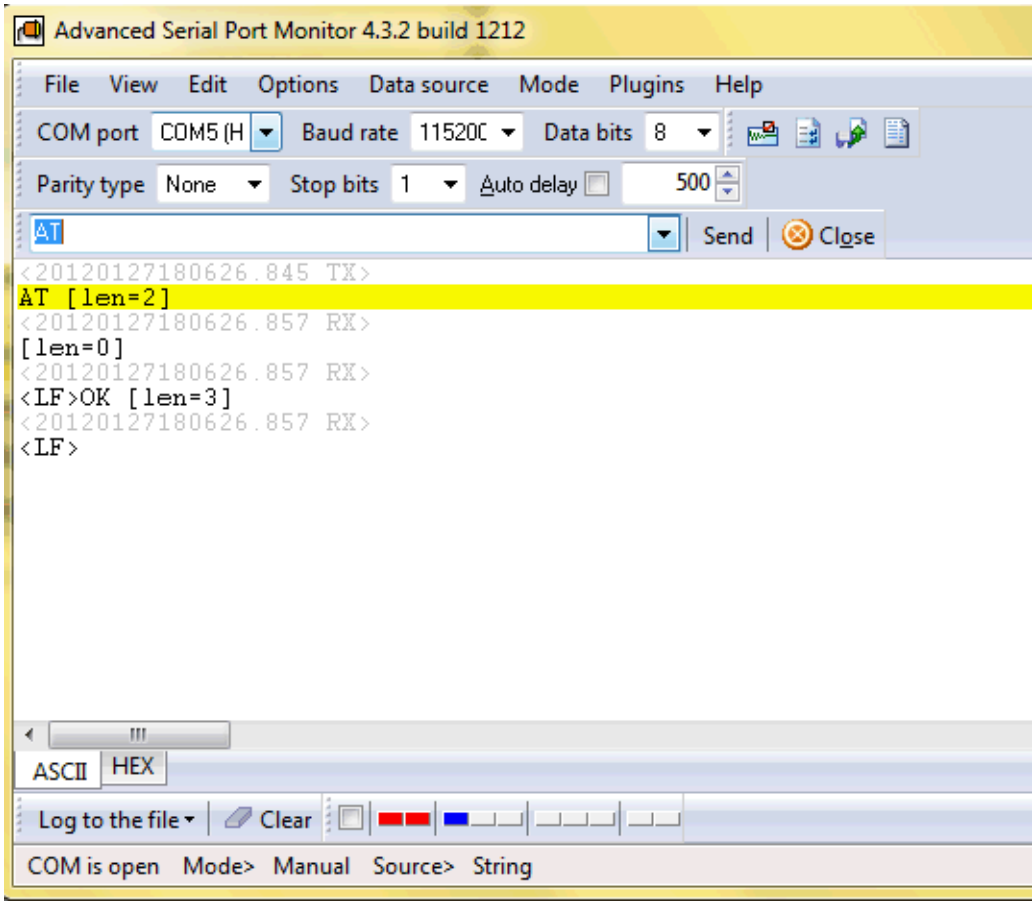
COM test program

The next example is based on the Advanced Serial Port monitor (evaluation version available on http://www.aggsoft.com).



The program must be started in administrator mode. Open the port at the speed configured in the modem.

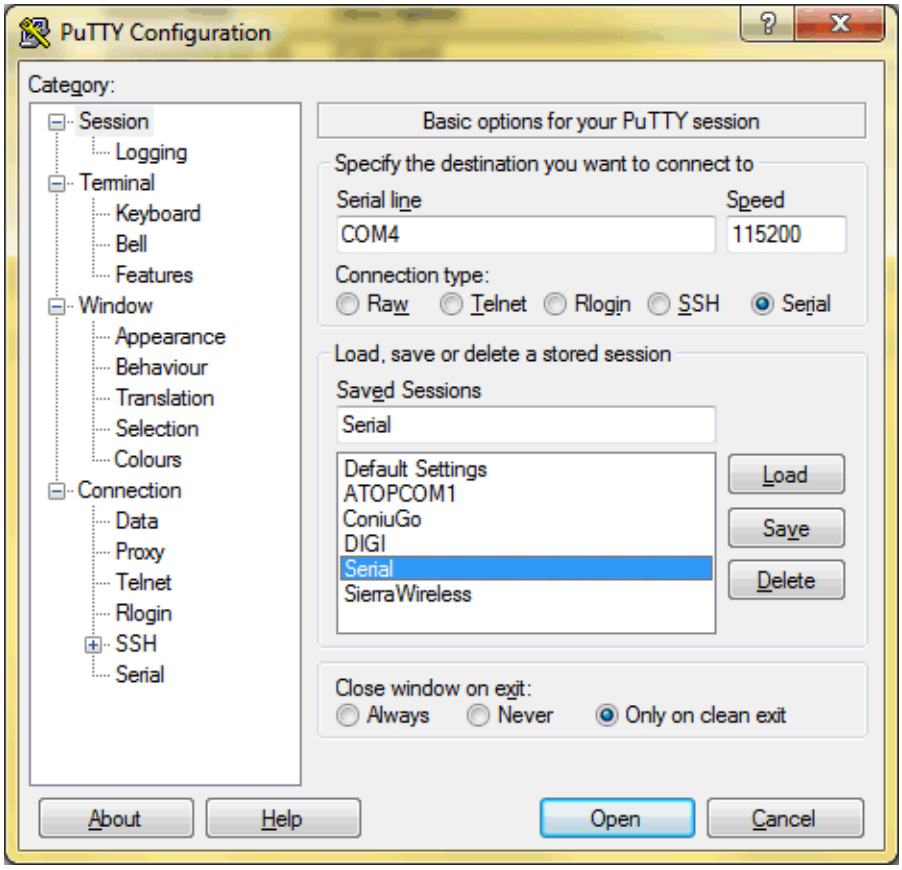
Send the AT command to the modem. The modem should respond with OK.



Putty (http://www.putty.org)

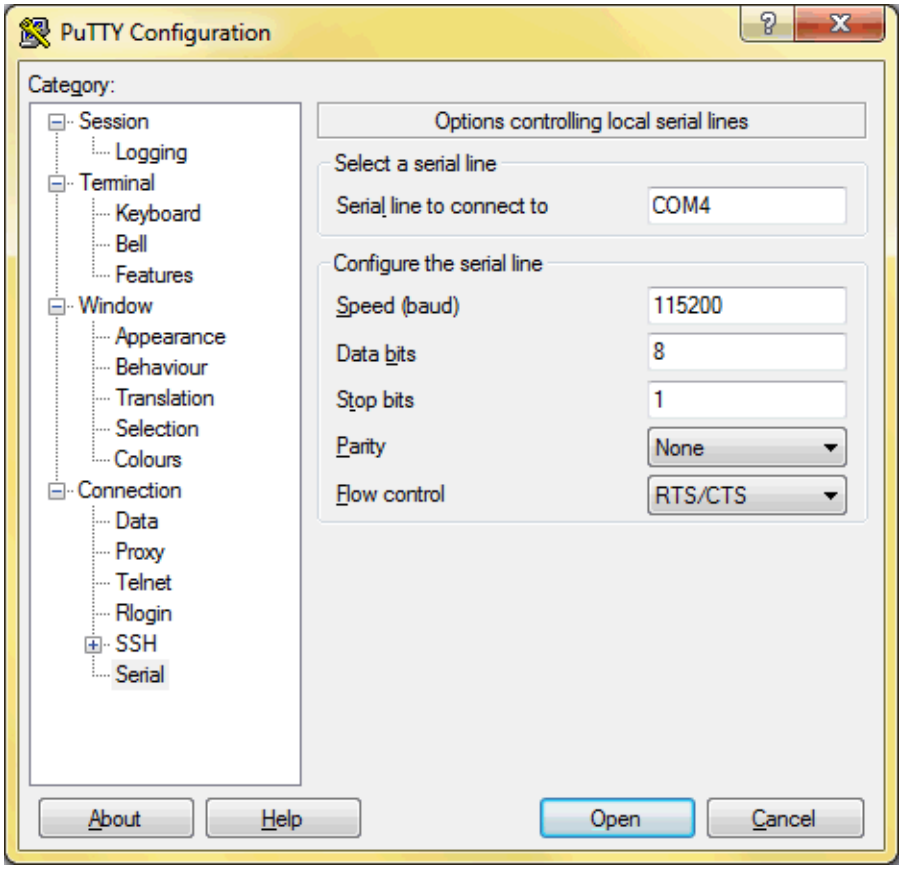
Putty is a free open source telnet client. It is normally used to communicate with devices connected to the LAN. However, in serial mode, it is perfectly suited to test the modem connected to the com port.

Download putty to your local Windows machine. Executy the putty.exe program



Configure your session (Clickon Session in the left pane)

Connection type = serial
Serial line = the COM port you are using
Speed = the default speed for your modem



Specify additional settings for the serial connection (click on Connection -> Serial in the left pane)

Data bits: 8
Stop bits: 1
Parity: None
Flow control: RTS/CTS

You are now ready to test the connection with your modem. Click on open. The modem should respond with OK to the AT command


COM4 - PuTTY
AT
OK

Initial configuration of the Cinterion MC 55iT modem

Sms4Domino assumes the modem has been properly initialized. This is true for a Cinterion modem that uses the factory default settings. However, when a modem is moved from some other project to Sms4Domino it may be necessary to change some modem settings.

Changing the settings is done by sending AT commands to the modem. We prefer connecting the modem directly to a serial port. Trying to connect the unknown modem to the serial-to-Lan convertor and then trying to talk to the modem over the LAN is not recommended.

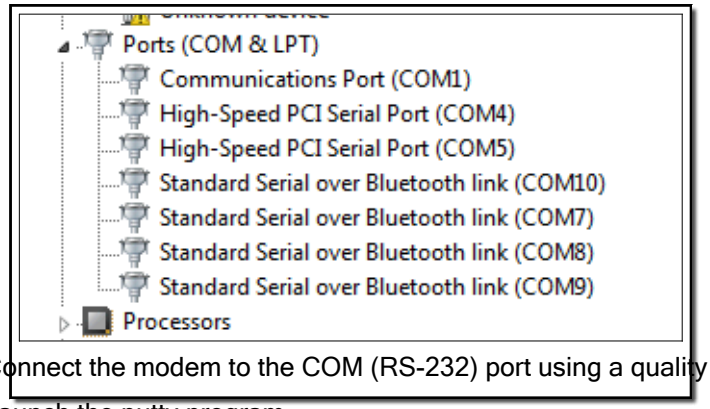
This document assumes you are using Putty for communicating with the modem.

Following steps will be executed

- Establish communication with the modem. It may be necessary to guess the baud rate
- Reset the modem to the factory defaults
- Set the required modem parameters
- Save the parameters to non volatile RAM. After each reboot of the modem these settings will be loaded automatically into memory.
- Verify the PIN code of the SIM card

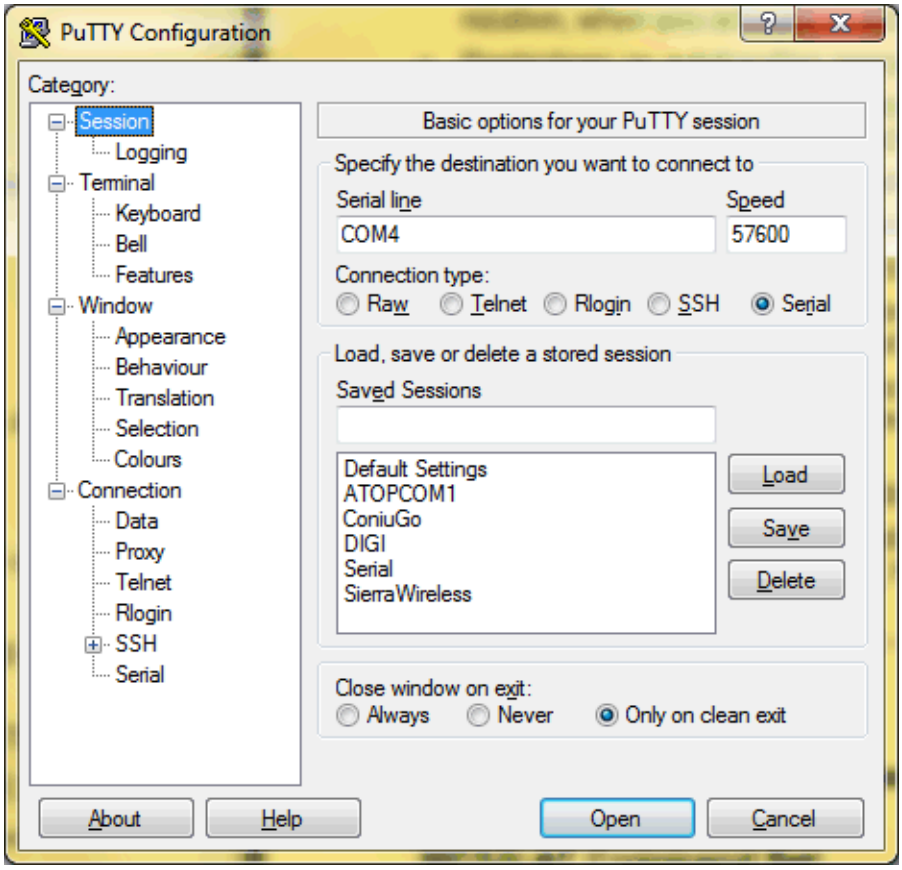
Establish communication with the modem

Find in the office a computer with a COM (RS-232) port. Determine the identifier of the COM port. In most cases this will be COM1. The Windows device manager lists all known ports

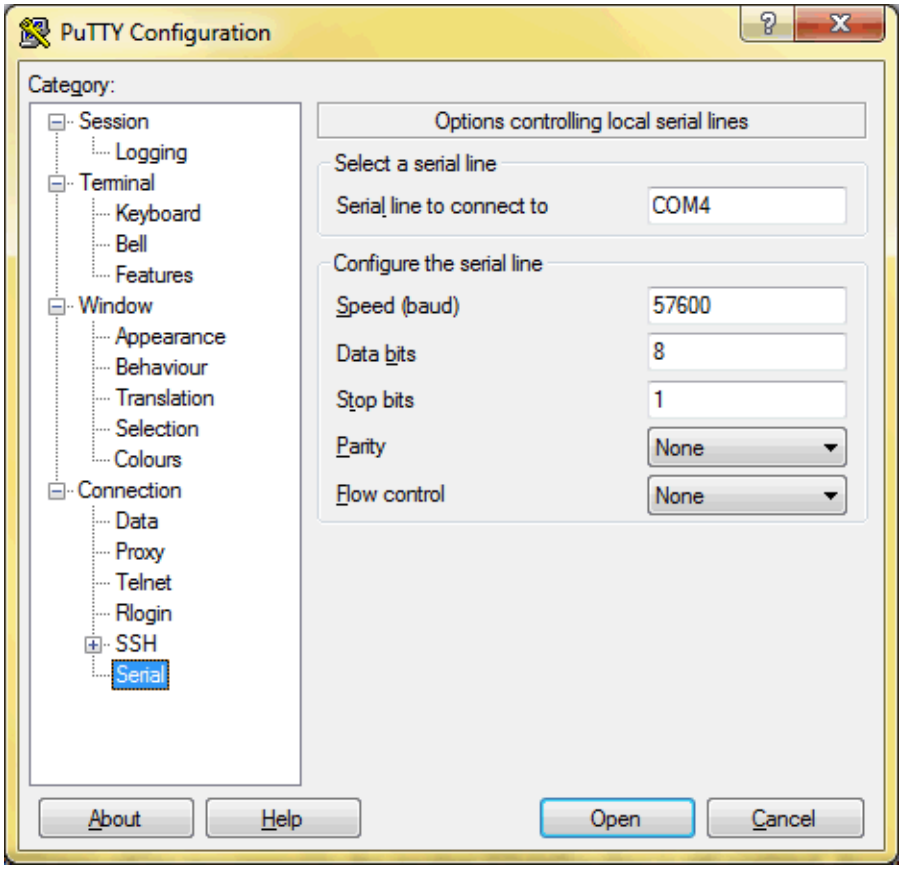


Connect the modem to the COM (RS-232) port using a quality RS-232 cable.

Launch the putty program



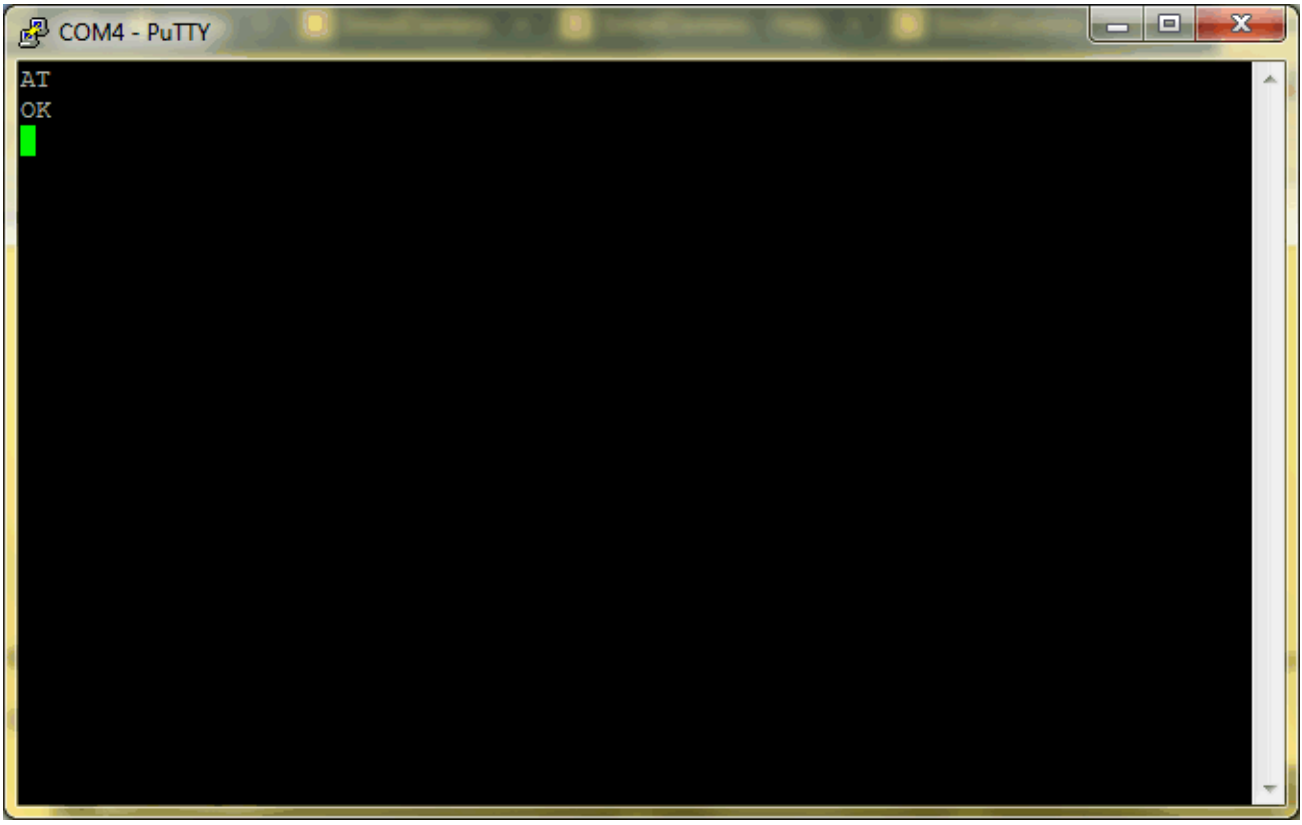
Within the Session category select the COM port (COM4 in above example) and the speed. 57600 bps will be recognized by the modem if AutoBauding is still enabled. Acceptable speeds for the Cinterion modem are 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200 and 230400 bits per second. AutoBauding is only possible for speeds up to 115200 bps.



Within the Connection -> Serial category specify the settings for data bits, stop bits, parity and flow control. Factory default settings are 8 data bits, 1 stop bit, no parity and no flow control.

Click Open. A pop-up window is displayed.

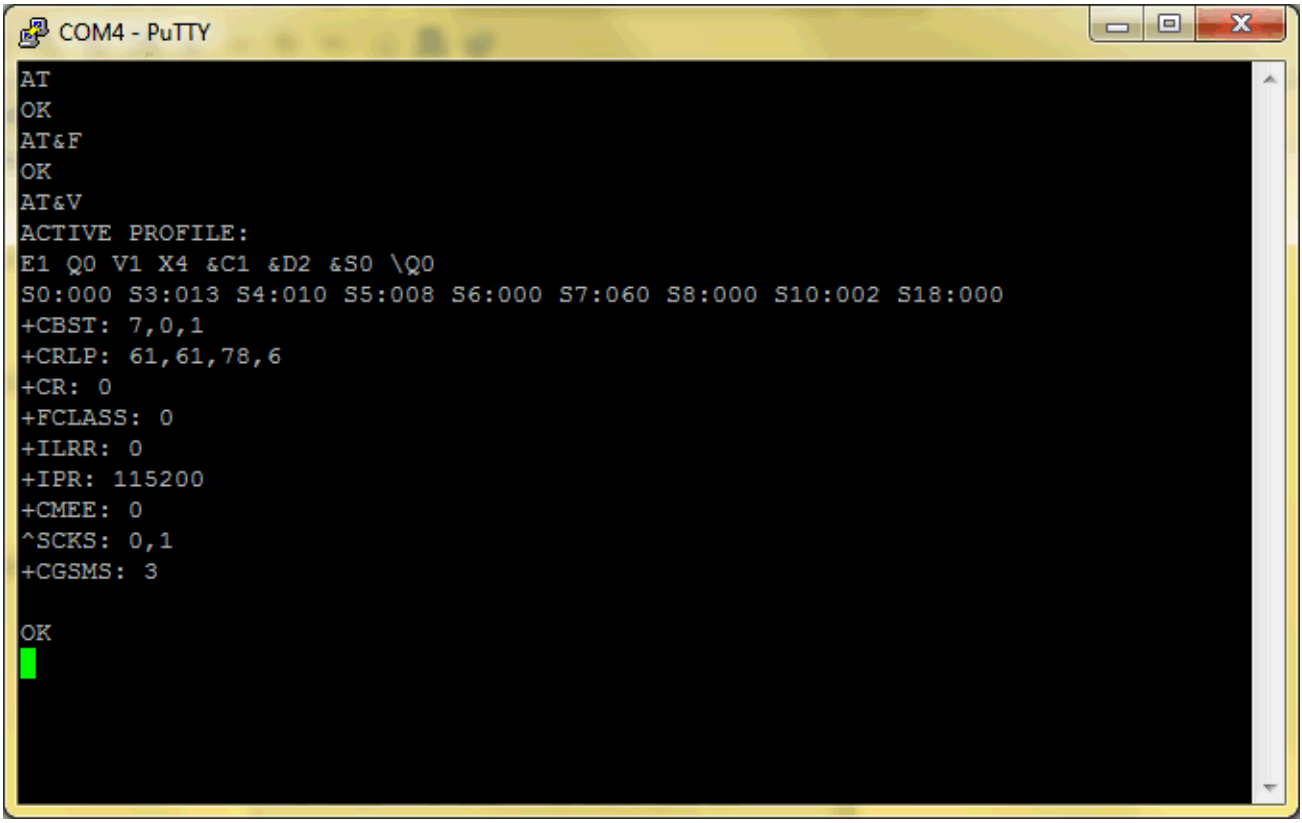
Enter the letters AT followed by pressing *Return.* The could be an echo of AT. The modem should respond with OK



If there is no respons from the modem you should verify your settings.

Reset the modem to the factory defaults

The AT&F command resets all modem parameters to the manufacturer defined profile. The modem response should be OK.
The AT&V command lists the current parameters. Consult the Cinterion AT command guide for more info.



Set the required modem parameters

The modem communication will be more reliable if autobauding is not used. The bit rate is specified by the

AT+IPR=<rate>

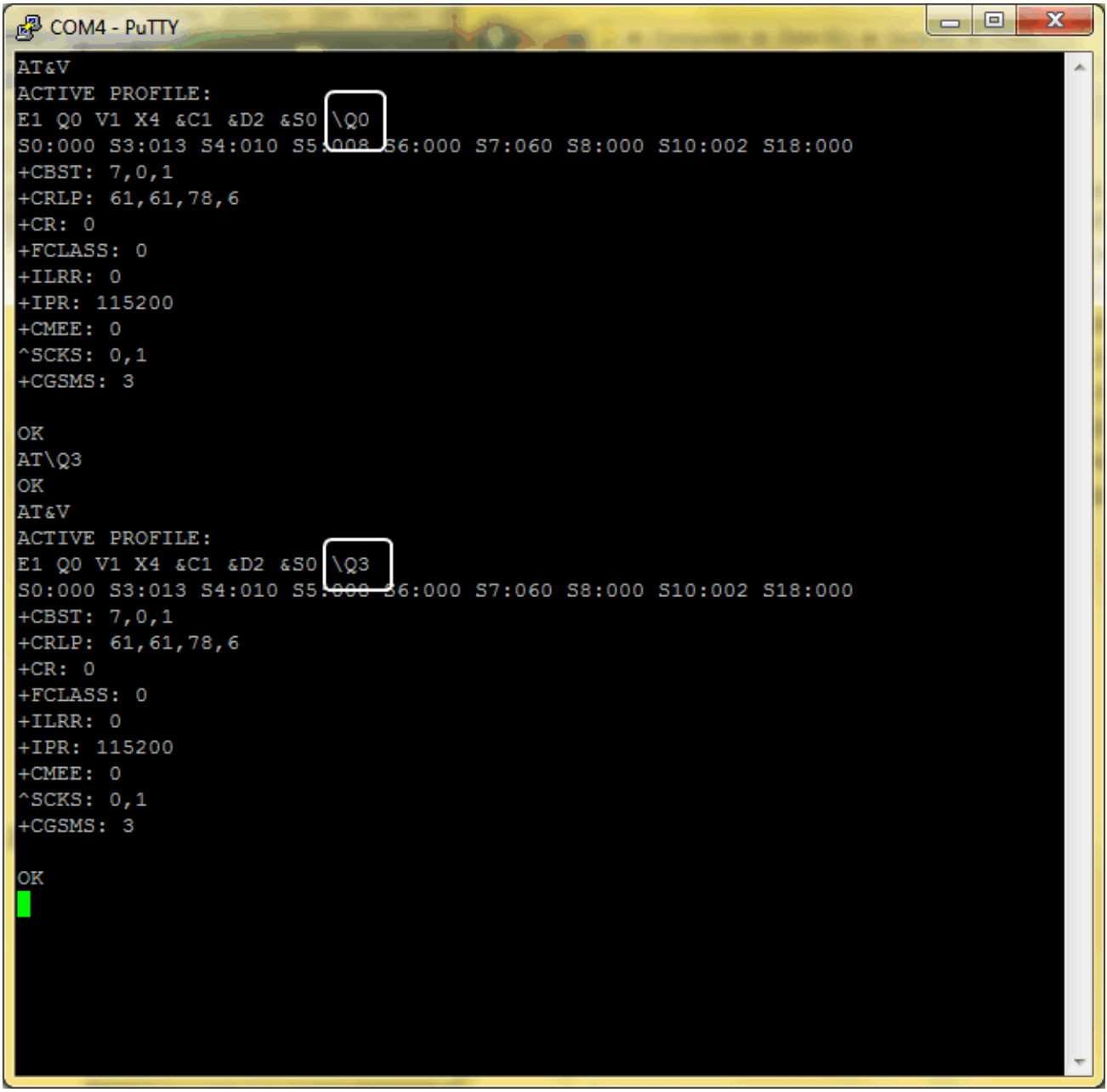
command. Values of <rate> are 0 for autobauding, 300, 600, ..., 57600, 115200, 230400.
The setting will not be changed by the above AT&F command.
The current bit rate may be queried by the AT+IPR? command

Flow control between the computer and the modem must be set to hardware flow control (using RTS/CTS).

Hardware flow control must be set on both sides: with AT\Q3 in the ME and an equivalent RTS/CTS handshake option in the host application.

The default setting of the modem is AT\Q0 (no flow control) which must be altered to AT\Q3 (RTS/CTS hardware handshake on). The setting is stored volatile and must be restored each time after rebooting the ME.

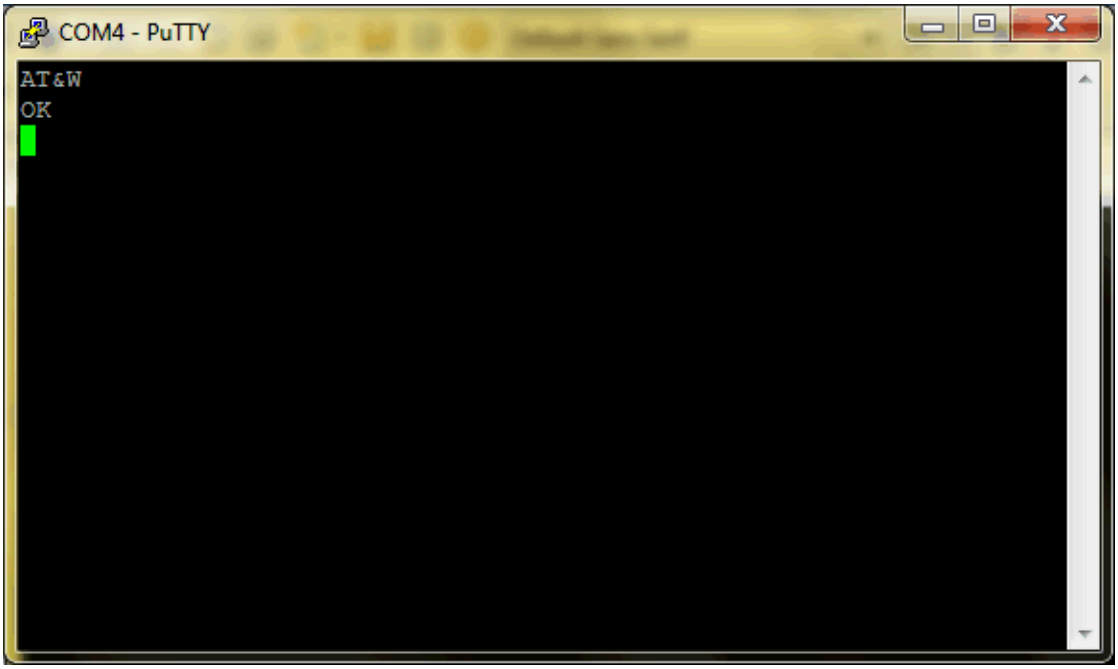
AT\Q has no read command. To verify the current setting of AT\Q, simply check the settings of the active profile with AT&V.



Later, when configuring the Sms4Domino environment and gateways, you should define the same parameter settings.

Save the settings to non volatile RAM

The AT&W command is used to store the settings to non volatile RAM. The modem responds with OK.
Sms4Domino will issue the ATZ command as one of the first commands to load the settings into memory.



Verify the PIN code of the SIM card

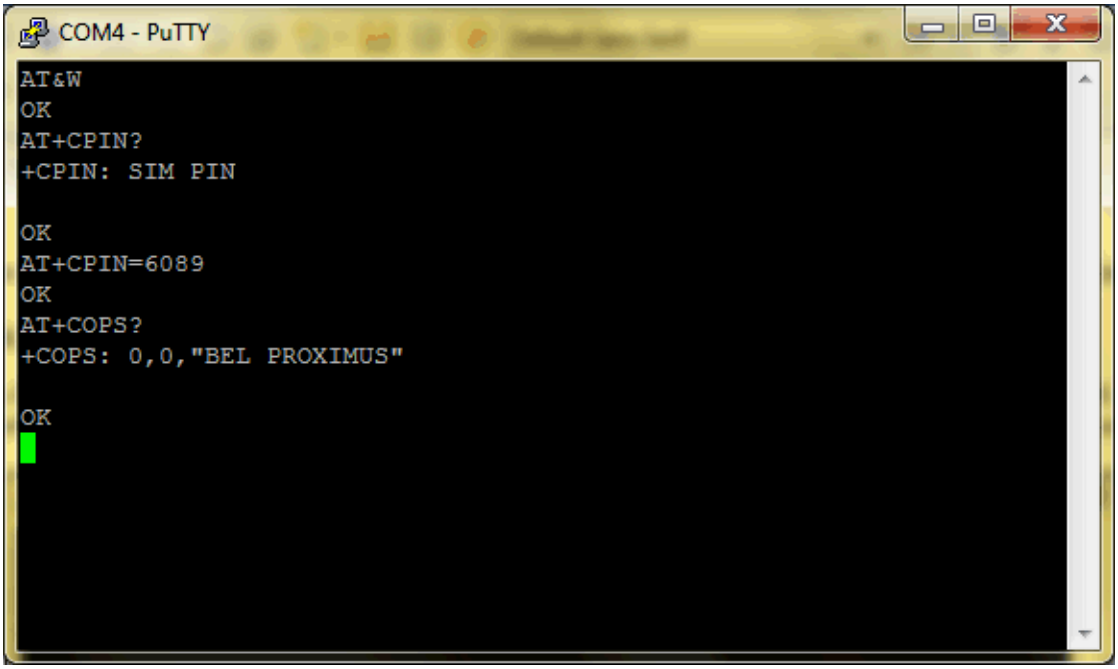
Power down the modem. Insert a valid SIM card. You should have received a corresponding PIN code.

The AT+CPIN write command can be used to enter one of the passwords listed below. The read command can be used to check whether or not the ME is waiting for a password, or which type of password is required. This may be for example the SIM PIN1 to register to the GSM network, or the SIM PUK1 to replace a disabled SIM PIN1 with a new one, or the PH-SIM PIN if the client has taken precautions for preventing damage in the event of loss or theft etc. If requested by the ME AT+CPIN may also be used for the SIM PIN2 or SIM PUK2.
If no PIN1 request is pending (for example if PIN1 authentication has been done and the same PIN1 is entered again) MC52i responds "+CME ERROR: operation not allowed"; no further action is required.
Each time a password is entered with AT+CPIN the module starts reading data from the SIM. The duration of reading varies with the SIM card. This may cause a delay of several seconds before all commands which need access to SIM data are effective.

We could further verify that the modem has been properly registered to the GSM network. Enter the

AT+COPS?

command.



Appendix: Cinterion AT command guide

mc52i_atcommands_v01201a.pdf

Configuration of the ATOP SE 5000 Serial server

In case no COM ports are available or when the GSM modem should be located outside the computer room it possible to connect the modem to a serial server. This device acts as a gateway between the Ethernet LAN and the COM modems. The configuration of the serial server is documented in the user guide.

The current help document guides you through the setup. Following steps must be executed

- Connect the serial server to the LAN
- Assign a fixed IP address to the serial server
- Configure the serial server
- Save the settings
- Test the setup via a Telnet connection

Connect the serial server to the LAN

The serial server has following factory settings

IP address: 10.0.50.100

Subnet mask: 255.255.0.0

Default gateway: 10.0.0.254

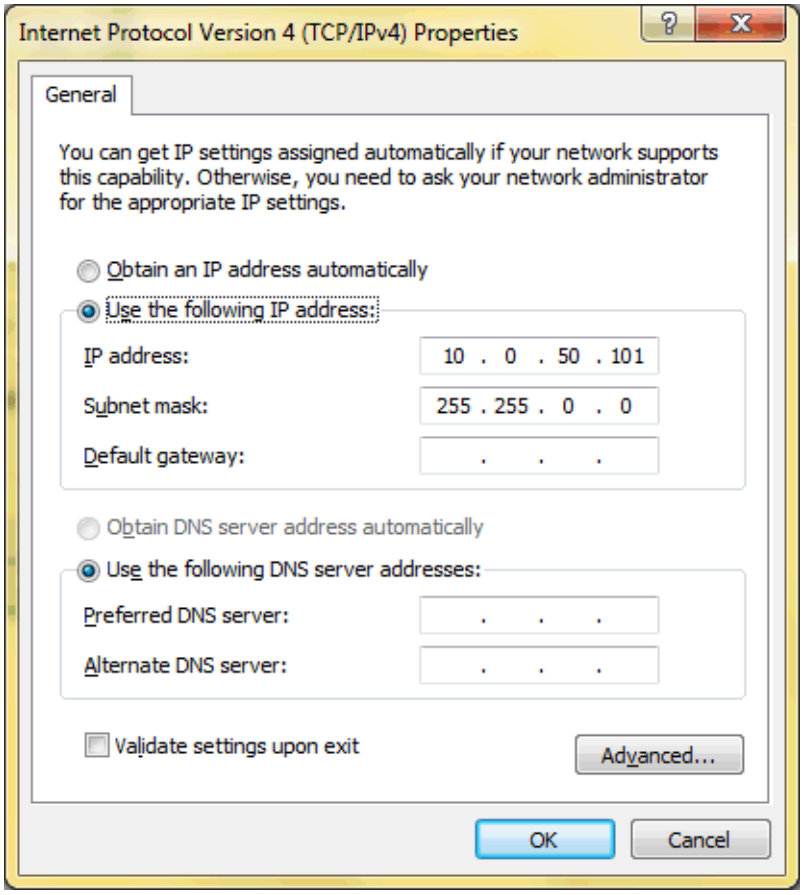
DHCP client: disabled

User name: admin

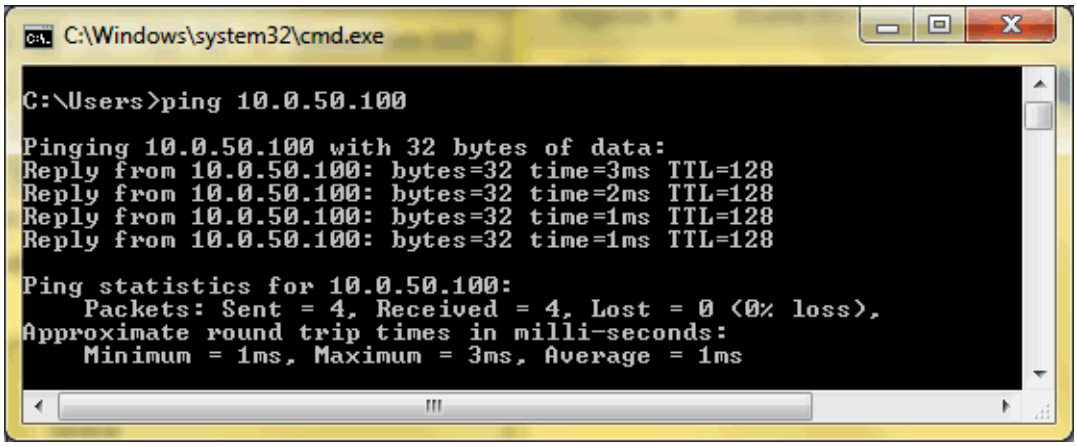
Password: <null> (leave the password field blank)

Use a paperclip to push the reset button for a few seconds. You will hear some beeps. This resets the serial server to the factory default settings.

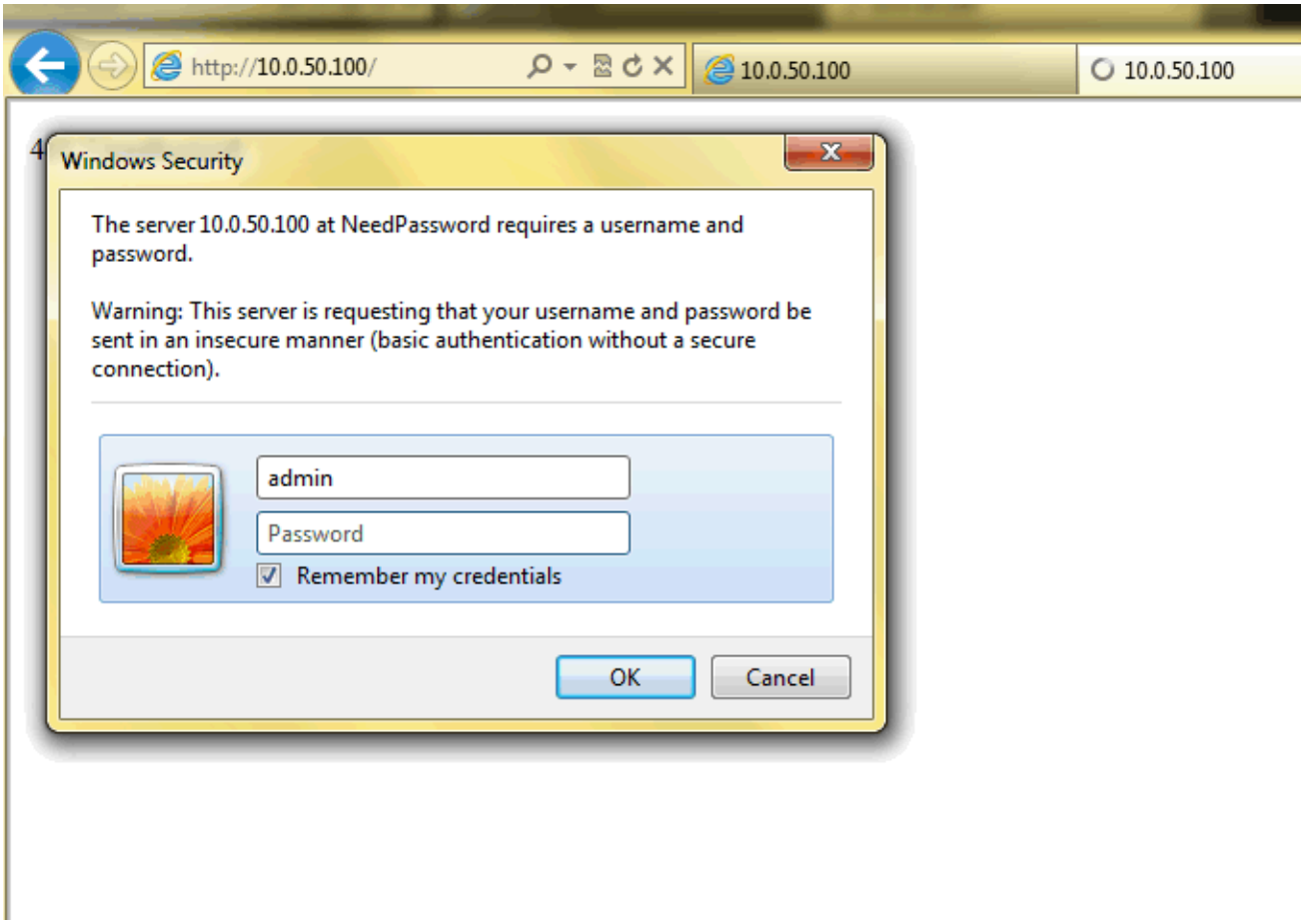
Configure the Ethernet port of your (test) computer with compatible IP settings. E.g.

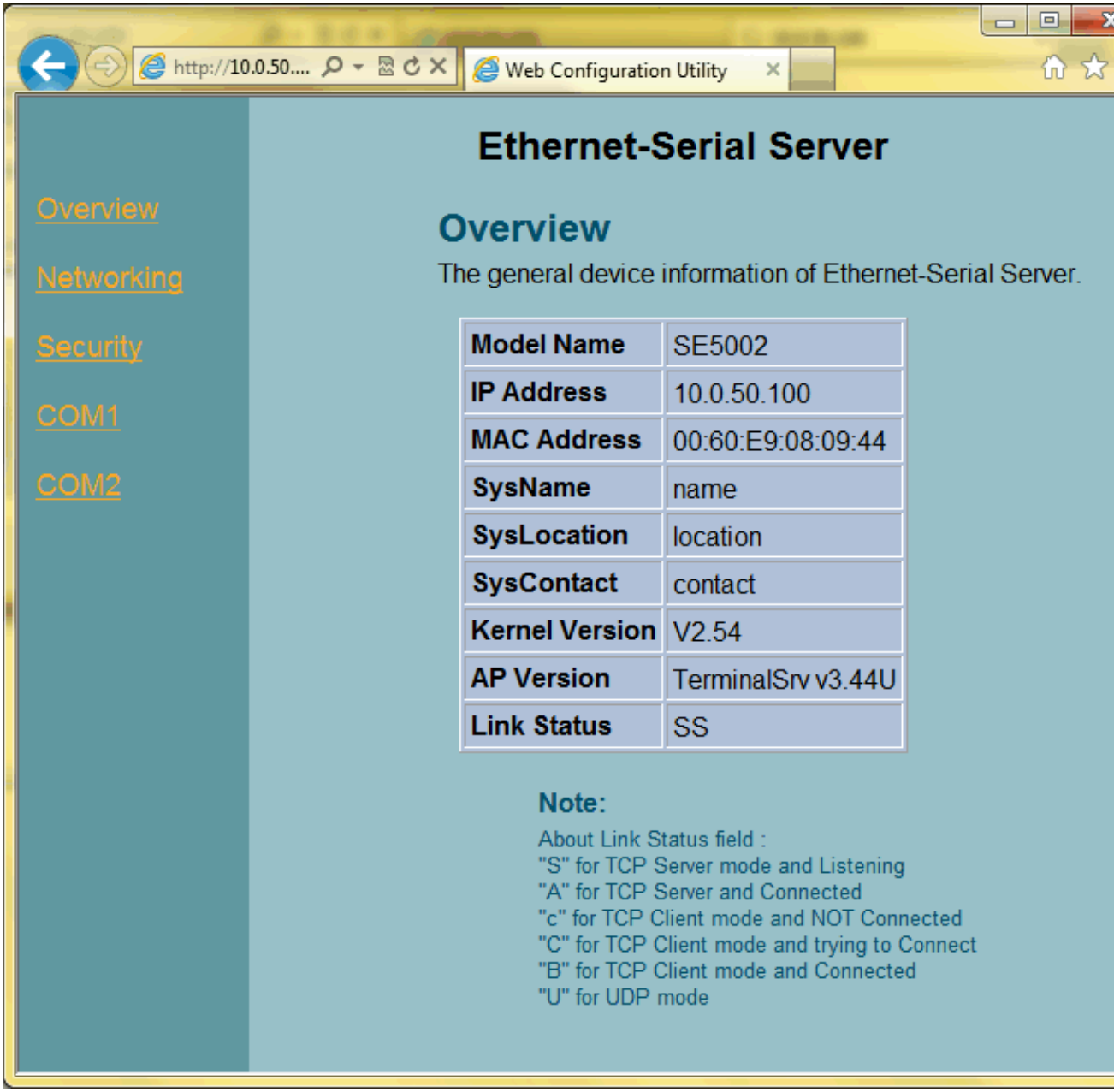


Connect the serial server to your computer. You need two straight cables and a switch or you could use a crossed cable and make a direct connecten between you PC and the serial server. Test the connection by ping-ing the serial server.



The serial server may be configured via the command line or using a browser. Internet Explorer should be used.
Enter http://10.0.50.100 as Url.

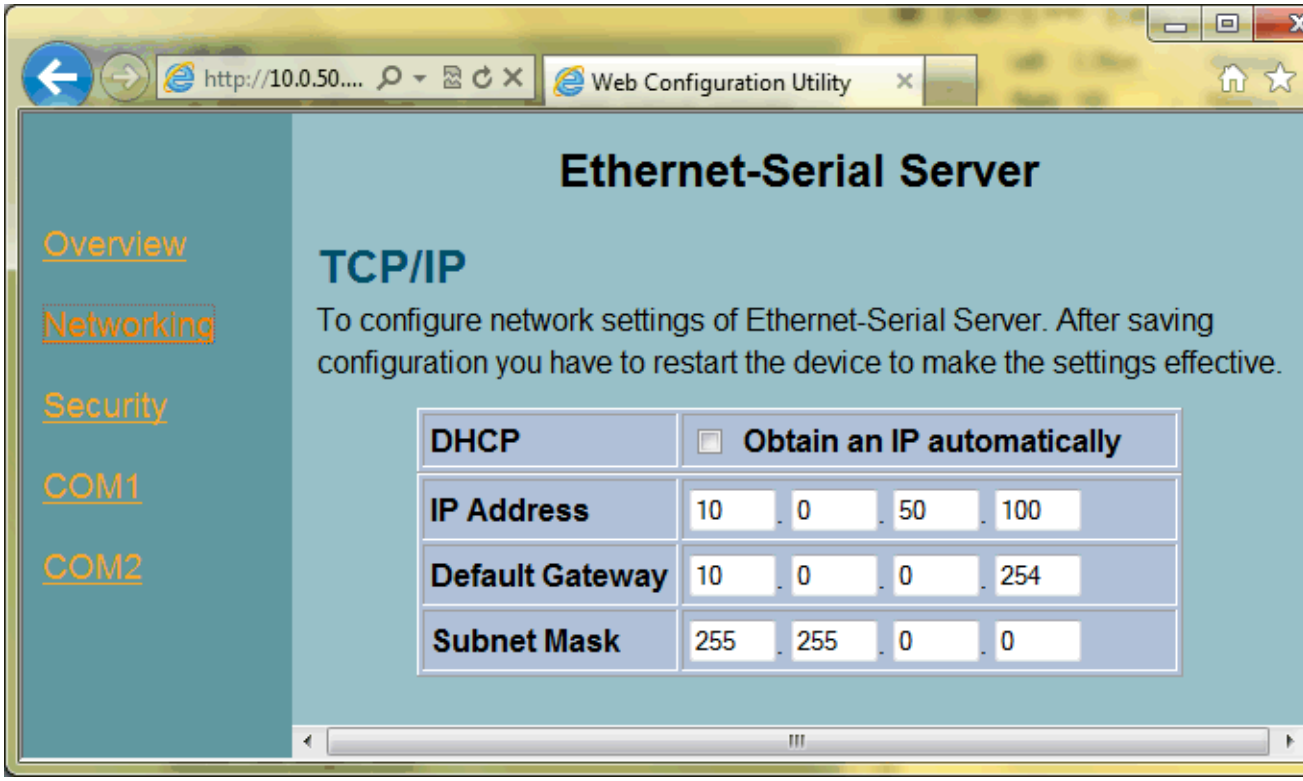

http://10.0.50.100/
10.0.50.100
10.0.50.100
Windows Security
The server 10.0.50.100 at NeedPassword requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
admin
Password
Remember my credentials
OK
Cancel



Assign a fixed IP address to the Serial Server

Ask your network administrator for a free IP address that is compatible with your network addressing scheme. The address may be assigned via DHCP or may be entered as a fixed address in the device. Sms4Domino requires the knowledge of this address.

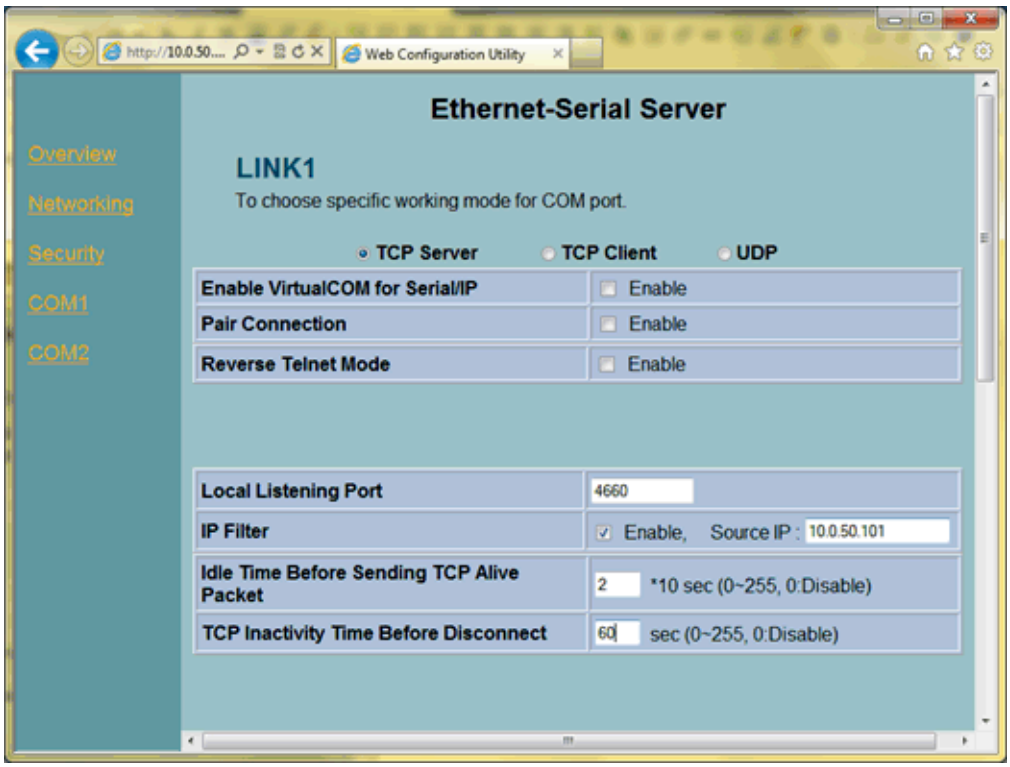
Enter the new address in the *Networking* section



Click on *Save Configuration* followed by *Restart.*
You are now ready to connect the serial server to the LAN. Further configuration steps must be using the above assigned IP address.

Configure the serial server

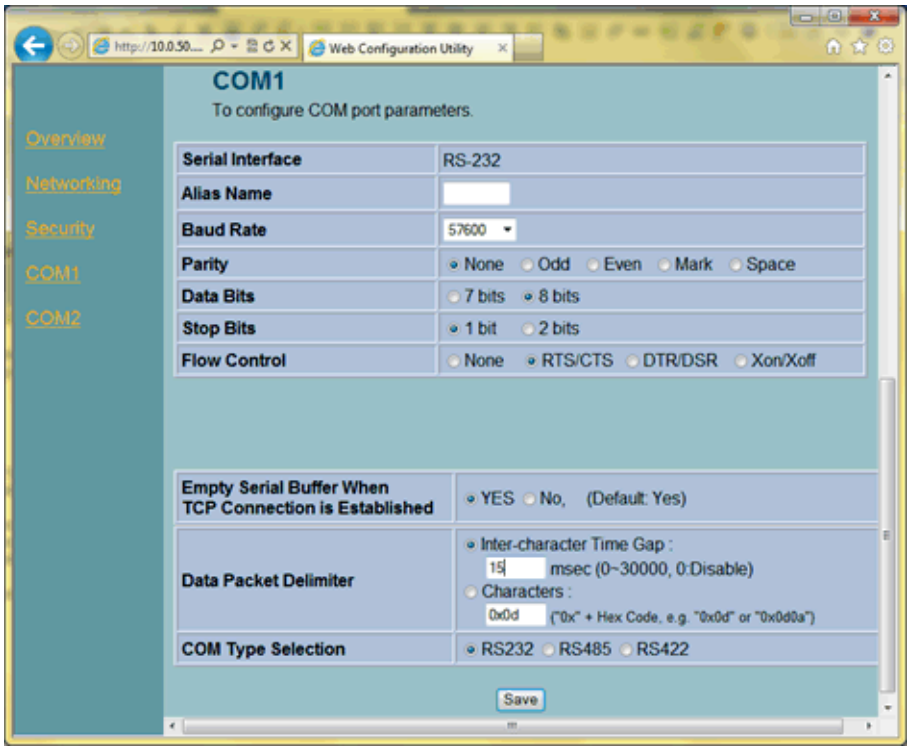
Following instructions must be repeated for each of the COM ports. In the example we will configure COM1.



Sms4Domino supports TCP/IP connected modems. There is no need for special driver software that must be installed in Windows.
The serial server must be configured with following settings

TCP Server
Enable VirtualCOM for Serial/IP: No
Pair Connection: No
Reverse Telnet Mode: No
Local Listening Port: 4660 or any other value. The same value must be specified in the Sms4Domino gateway definition document
IP filter: this is a security feature. Only the Sms4Domino server should be allowed to communicate with the serial server.
Enabled: Yes
Source IP: specify the IP address of the Sms4Domino server
Idle Time before sending TCP Alive packet: Sms4Domino assumes the TCP/IP connection remains open. Enter 2 for 20 seconds
TCP Inactivity Time: in case of a failure of Sms4Domino the connection should be broken. Specify 60. This value should be higher than the watchdog interval specified in the application profile (SmsLib settings)

Following set of parameters correspond to the physical COM interface. The settings must be the same as the ones that have been configured in the modem.



Alias Name: for your own documentation
Baud rate: 57 600 (this is the default for the Cinterion modem)
Parity: none. (this is the default for the Cinterion modem)
Data bits: 8. (this is the default for the Cinterion modem)
Stop bits: 1 bit. (this is the default for the Cinterion modem)
Flow control: RTC/CTS (this is the default for the Cinterion modem)
Empty Serial Buffer: Yes
Data Packet Delimiter: this parameters determines at what moment data received from the modem should be transmitted to Sms4Domino. There is no fixed terminator character that applies to all responses. The only acceptable data packet delimiter is based on the inter-character time gap. A value of 15 msec should be fine.

COM Type Selection: RS232

Click the *Save* button to save the settings.

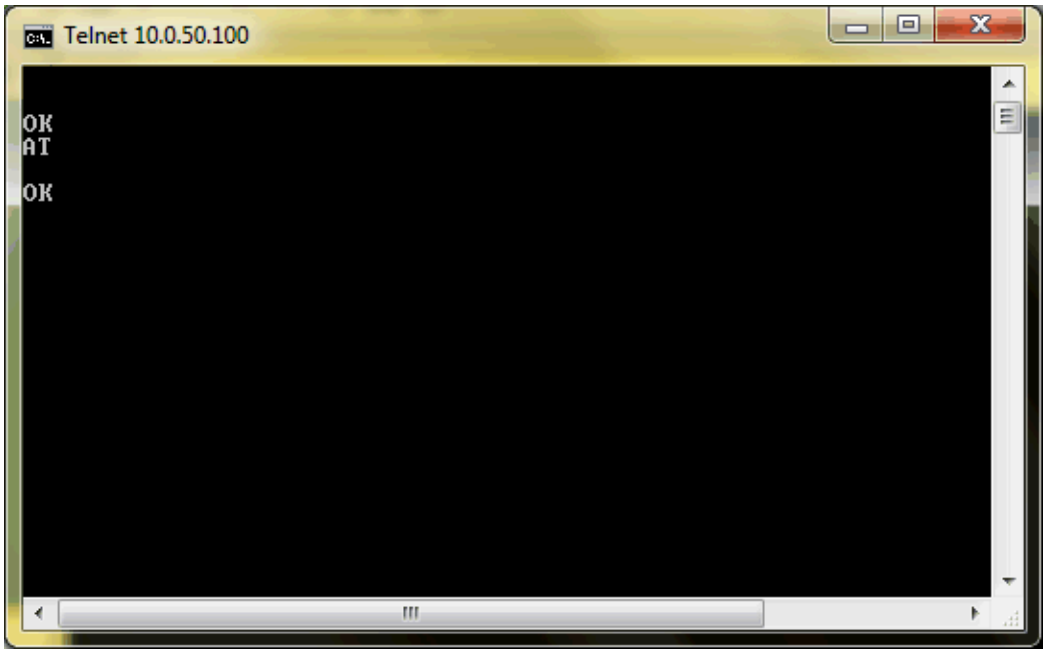
Test the connection

We assume the modem has already been configured. Connect the modem to the COM port of the serial server.

Open a Dos box and enter the command (assuming the serial server is configured for IP address 10.0.50.100 and to listen on port 4660)

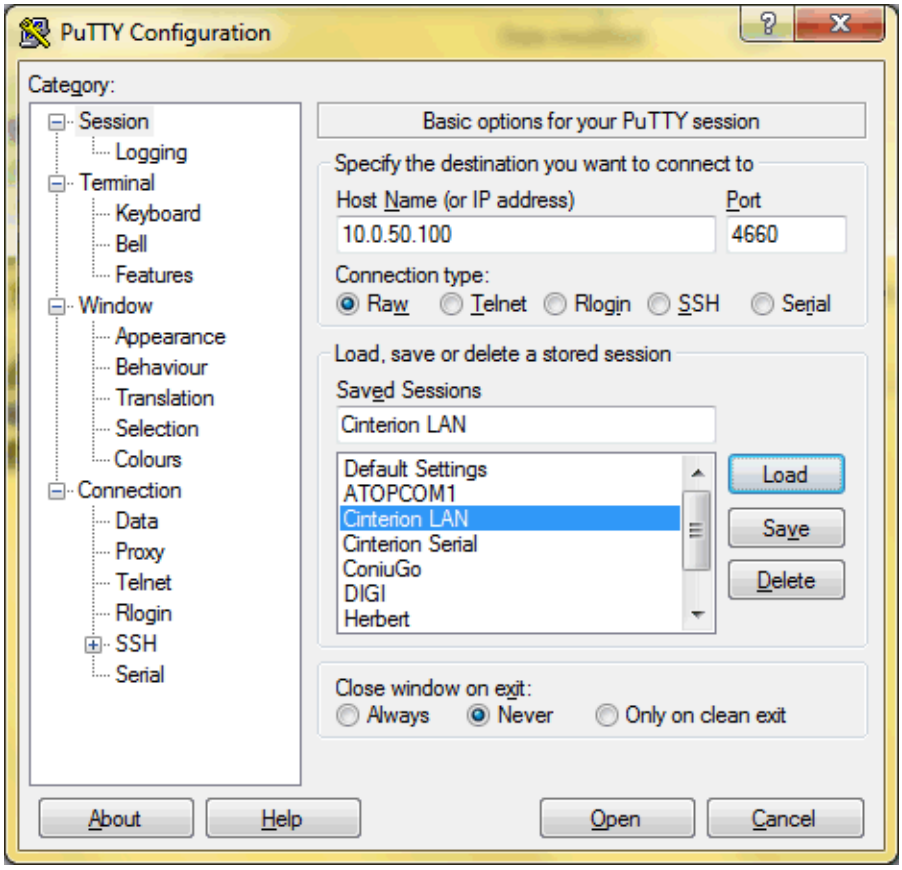
telnet 10.0.50.100 4660

The Dos window is cleared. Type AT. The modem should respond with OK



After the configured idle time the connection is closed automatically.

The same test could be performed using Putty. The connection type must be set to Raw.



Appendix: Atop user guide

SE5002 Serial- Ethernet User's Manual (V1.3).pdf

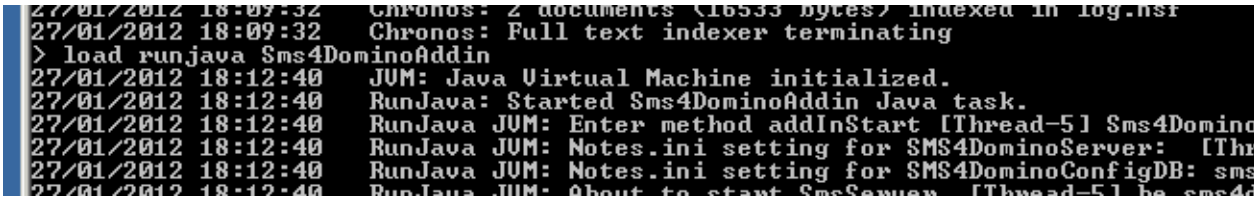
Decide on the architecture

Sms4Domino may be deployed in different configurations. However the program, as the name implies, always require the presence of a Domino server.

Running the Sms 4Domino program as a server add -in

Sms4Domino is a Java program. The program should run continuously. As Domino agents are limited in execution time it is not possible to run the program as an agent.

Sms4Domino may run as a Domino add-in task. The program is started via the *load runjava Sms4DominoAddin* console command (case sensitive). All input/output between the Domino administrator and the program goes via the Domino (remote) console. As a shortcut the program may also be started using the *load runjava Sms* console command.



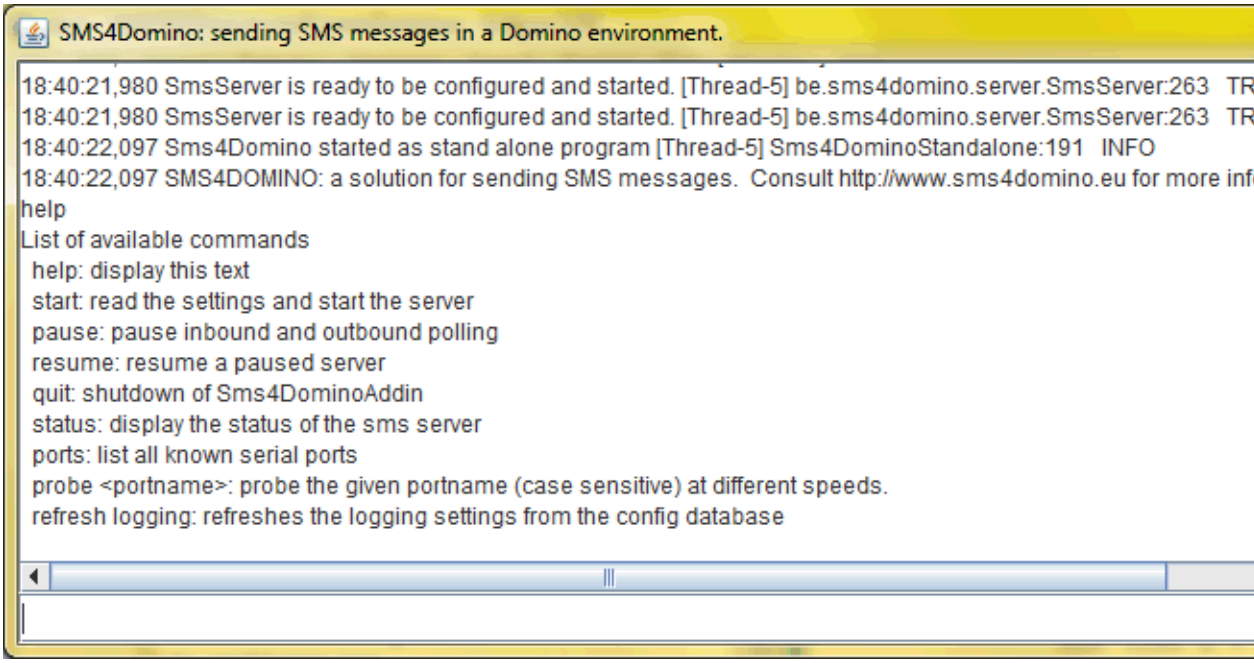
In order to run a Java program as a server add-in command Sms4Domino makes use of the open source software JAddin (http://abdata.ch/JAddIn.html). This kind of integration has not been certified by IBM. Till today we have not yet experienced any problems.

The GSM modems are attached to the Domino server.

The main advantage of this configuration is the integration of the input/output with the Domino console and log.nsf file. It is possible to use the Domino remote console to interact with the program. The program may be started using Domino program documents or notes.ini settings.

Running the Sms 4Domino program as a standalone program

Sms4Domino may run as a stand-alone program on a workstation. Lotus Notes must have been properly installed and configured on the workstation. Sms4Domino will access the Domino server using the credentials of the current Lotus Notes user-id (defined in notes.ini by the KeyFileName variable). The password must be supplied as a start-up parameter or the user id must have no password.
Sms4Domino will create a console for interacting with the administrator.



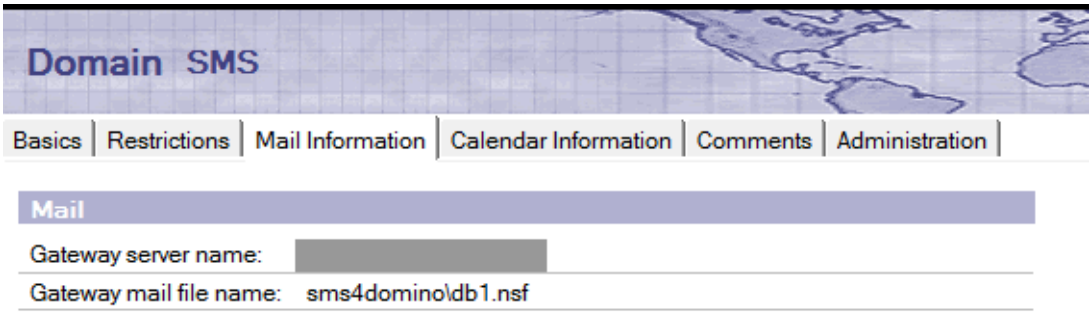
The GSM modems are attached to the workstation. The configuration database must be installed on the Domino server.

This set-up does not depend on the JAddin program. However there is no integration with the Domino logging, no possibility to use the remote Domino console and supplying the Notes password via the command line may be less than ideal. In case the Domino server is stopped or the network connection becomes broken, Sms4Domino will not be able to continue, will log errors to the console and, in most cases, must be restarted in order to recover from the failure.

Databases

The main database is the configuration database. It contains the application profile, the license file and the configuration documents for the gateways and the interfaces. The database is based on the Sms4Domino template. The database must be located on a Domino server and not on a workstation.

In most cases requests for sending Sms messages are created via Lotus Notes mail messages (received by the *Notes mail messages* interface). The Domino routing configuration requires the definition of a foreign domain document. The foreign domain documents defines a gateway file name. This could be the configuration database or a separate database. The database should always be based on the Sms4Domino template. We recommend using a separate database.



Sms4Domino may generate accounting documents. These documents provide a view on the Sms volume, over a period of time, for a user, a gateway or an interface. The accounting information may also be used to block a user from sending more Sms messages. The

accounting documents may be stored in the control database or in a separate database. The database is based on the Sms4Domino template. We recommend using a separate database.

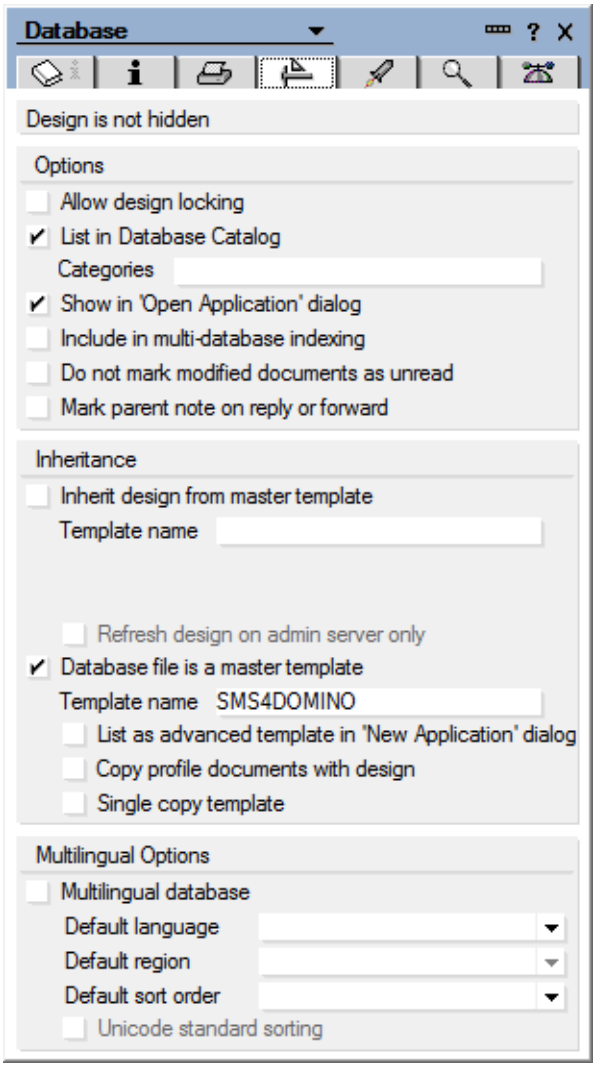
Installation of the databases

TheSms4Domino software is shipped as a set of two Domino databases : the Sms4Domino template and the help file. The template is a common template that must be used for all Sms4Domino related databases.

The files may be delivered on a CD, by e-mail or may be downloaded from the Internet. The Sms4Domino template database is distributed as a Notes template file (.ntf). The help database is distributed as a standard Notes database file (.nsf).

The databases may only be accessed by a Notes client and not by a web browser.

The current version of the template is 1.0.

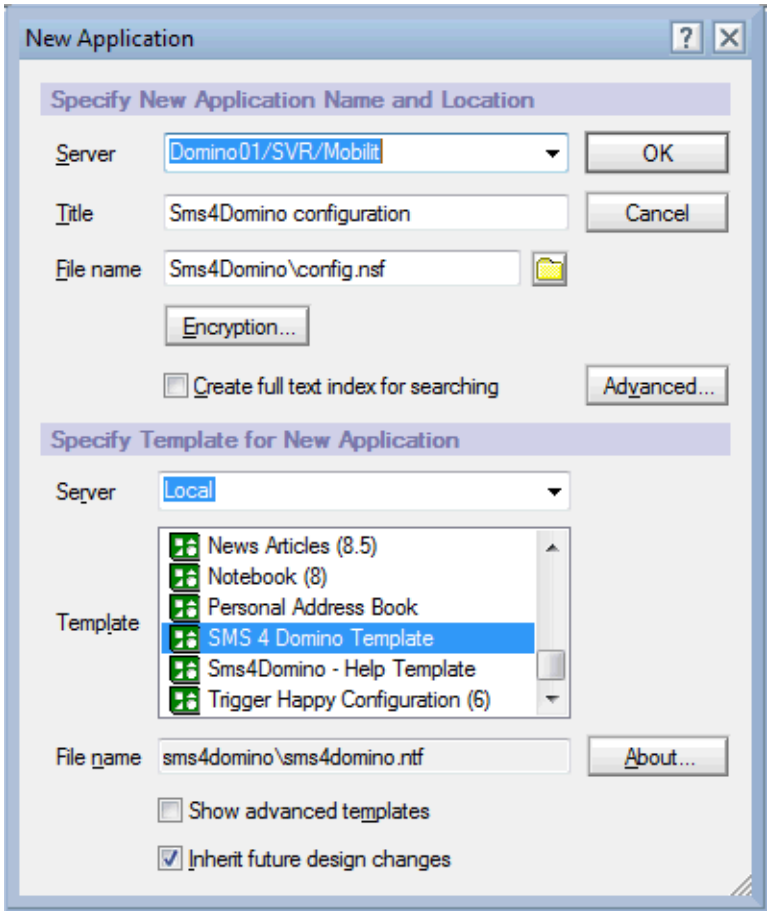


- Get a copy of the databases. Unzip the files if required.
- Copy the template to your local Lotus Notes data directory. By preference this should not be done on the Domino server but on a workstation of the administrator. Do not forget to remove the "read-only" attribute that may be present at the level of the operating system.

  The ACL settings of the template grants full access to all users. This may be changed according to your company policy settings.
- Sign the template using the Notes user-id of the administrator in order to avoid any future ECL warnings. This user-id should have sufficient access rights to run Lotusscript agents.

You could be prompted for the creation of a cross-certificate in your address book. Click No.

- Use the Notes client to copy the template to the Domino server. The template on the workstation is then no longer needed.
- Create a configuration database from this template. The database must be stored in the data directory or a subdirectory on the Domino server. The title and file can be any valid name. (In the help document *Notes.ini settings* you will learn how to tell Sms4Domino where to find this configuration database). The license file that is required to run Sms4Domino is based on the server name where the configuration file is located. Moving the configuration database to another server requires the presence of a new license file.



- Modify the default ACL of the database. Details of the ACL settings may be found in the document ACL Settings of the application.
- Some database properties for this database
  - When opened in the Notes client : Open designated frameset *Main1*
  - When opened in a browser : Open designated page *AccessForbidden*
  - Full text index is not required
- Copy the help file to your local Lotus Notes data directory. By preference this should not be done on the Domino server but on a workstation of the administrator. Do not forget to remove the "read-only" attribute that may be present at the level of the operating system.
- Sign the database using the Notes user-id of the administrator in order to avoid any future ECL warnings.
- Use the Notes client to copy this database to the Domino server. The copy must be stored in the data directory or a subdirectory on the Domino server. The file name can be any valid name. The database on the workstation may be deleted. (In the help document *Application*

profile settings -> General settings you will learn how to make a link between the Sms4Domino configuration database and the help database).

- Modify the ACL of the database. The default ACL grants manager level access to all users. Standard users should have read only access.
- A full text index is recommended on the help database.
- In case separate databases are used for the accounting documents and/or the foreign domain mailbox the procedure for creating the configuration database must be repeated. The application profile in these databases contain a link to the main configuration database.

ACL Settings of the Sms 4Domino configuration database

This database is the central point for the application. It contains all configuration settings and eventually queues of Sms requests, accounting data, ...

This database should not be accessible by unauthorised users. It should get the same level of protection as the Lotus Domino directory.

Access to the application is controlled by access levels and roles in the ACL.

The available roles and their purpose are explained in following table.

Role	Purpose
[DBAdmin]	- grants write access to the application profile - grants access to the run-time dll files - grants author level access to all documents - this role is normally assigned to a single administrator, responsible for the set-up of the software - the owner of the role should have Author level access or higher in the ACL

Recommended ACL settings for the server

- Manager level access (at least editor level access is required)
- All roles enabled

Recommended ACL settings for administrators

- Author level access
- Delete documents

Recommended ACL settings for the user -id running Sms 4Domino

When running Sms4Domino as a server add-in this user-id is the server-id. When running Sms4Domino as a standalone program this user-id is the id specified by the notes.ini entry KeyFileName. This corresponds to the user-id that was used the last time Lotus Notes was started.

- Manager level access (at least editor level access is required)
- All roles enabled

Recommended ACL settings for web users

- No access (the database has not been designed for web access)
- No roles enabled

Installation of the runtime files

Sms4Domino is a Java program that may run as a server add-in or as a standalone program. The program depends on some open source libraries (see the document *About this database* in the current help file). All code has been packaged in a few jar files *Sms4Domino.jar* and the jar files of the open source components.

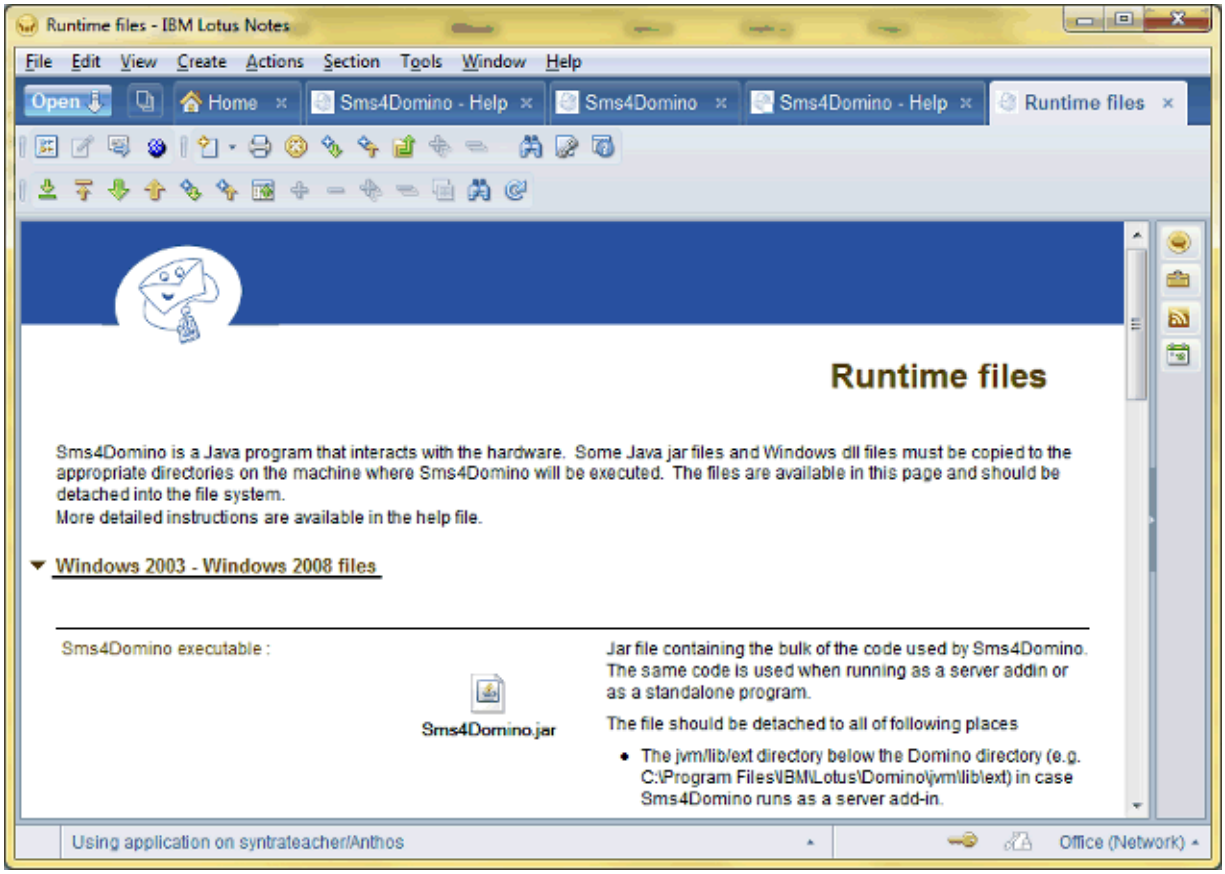
Java must be able to communicate with the GSM modems over the serial COM ports. One dll file is required. There is a specific file for 32 bit Windows and another for 64 bit Windows.

All runtime files may be found in the configuration database via the menu *System -> Runtime files*.

You need the [DBAdmin] role in order to access the page containing the runtime files.

Procedure

1. Open the Sms4Domino Configuration database.
2. Select *System -> Runtime files* in the left navigation pane. A page containing the jar and dll files opens.
3. Open the *Windows 2003 - Windows 2008* bit section.
4. Detach all files into the specified directories on the machine where the Sms4Domino program will be running.
5. Close the window.



Notes.ini settings

Most of the run time parameters for the Sms4Domino software are specified in Lotus Notes documents in the configuration database. However, when Sms4Domino is started, it must know where to find the configuration database.

This is achieved by two mandatory notes.ini settings. When Sms4Domino is running as a server add-in the notes.ini of the server must be modified. When Sms4Domino is running as a stand-alone program the notes.ini of the Notes client must be modified.

The notes.ini of the Domino server may be modified by editing the file directly. However, it is recommended to specify the settings in a configuration document in the Domino directory. The notes.ini of a workstation is edited using a plain text editor like Notepad.

The list of available notes.ini parameters is specified in following table. The parameters are not case-sensitive. Some of the parameters are mandatory !

Parameter	Purpose
Sms4DominoConfigDB	This parameter specifies the location of the Sms4Domino configuration database. This database resides in the Domino data directory or one its subdirectories. The parameter must be specified as a relative file name. The parameter is case sensitive on some platforms (e.g. Unix) Example : Sms4DominoConfigDB=Sms4Domino\configdb.nsf Default value: sms4Dcfg.nsf
Sms4DominoServer	This parameter specifies the hierarchical name of the Domino server where the configuration database resides. In case the parameter is not specified the filter assumes the database resides on the current server. Example : Sms4DominoServer=Acme/SVR/Comp Validation of the license file is only possible if the configuration database is located on a Domino server.
Sms4DominoConsoleWidth Sms4DominoConsoleHeight	These two parameters are only used when Sms4Domino is running as a stand-alone program. They define the width and height, expressed in pixels, of the console used for logging and entering commands. The open console may be resized by the Windows user. When Sms4Domino is stopped the current console size is saved into these two environment variables. Example : Sms4DominoConsoleWidth=1000 Sms4DominoConsoleHeight=500

Application profile settings

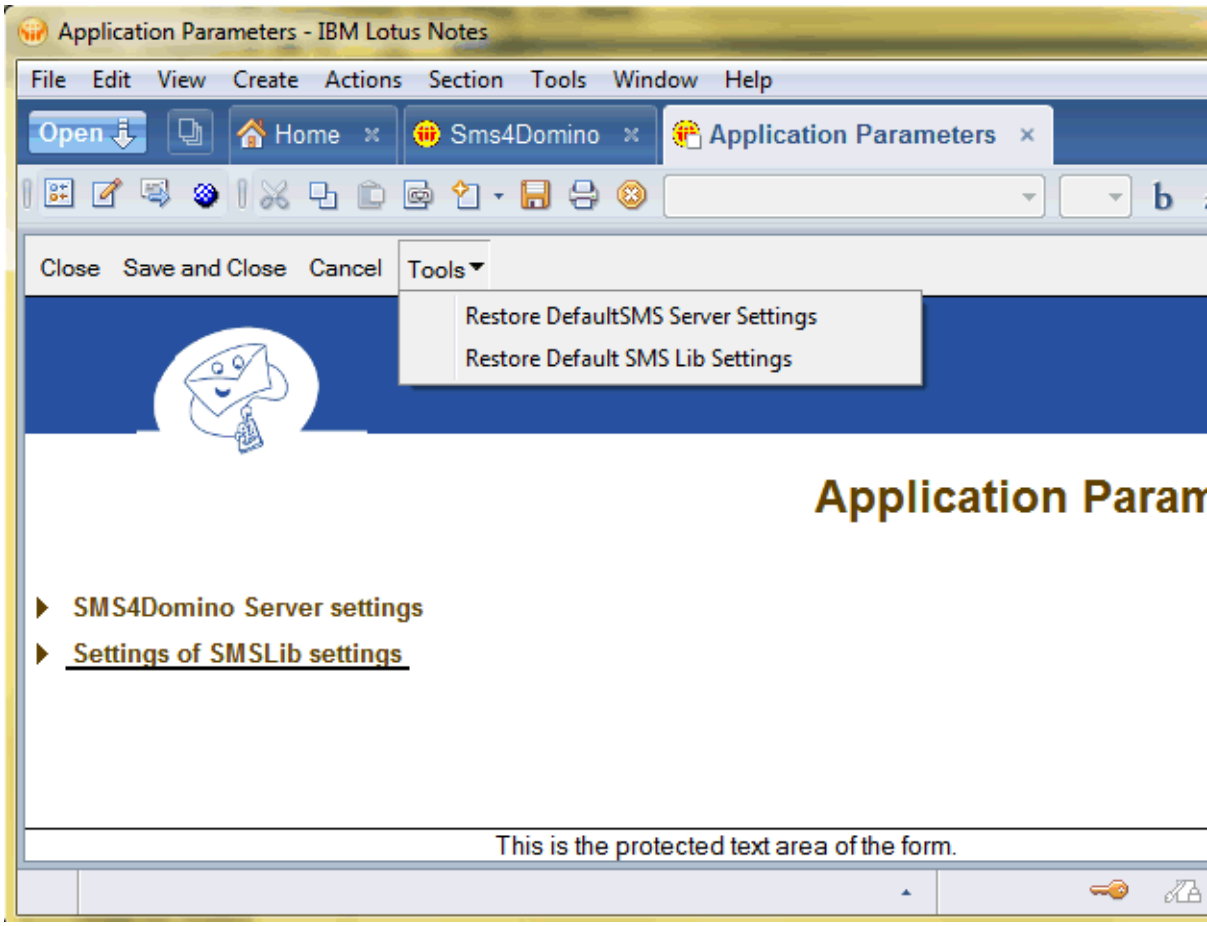
Most of the global parameters of the Sms4Domino software are specified in the application profile in the configuration database. This document is mandatory and must be created by the database administrator. You need manager level access to create such a profile.

You should close the Notes configuration database after any modification of the application profile.

It is required to stop and restart Sms4Domino in order to make the modifications to the application profile visible to Sms4Domino.

Procedure

1. Open the Sms4Domino configuration database.
2. Select *System -> Application Parameters* in the navigator. The profile document is opened in edit mode
3. Verify all default settings and modify them if necessary. Default settings may be restored at any time by clicking the *Tools* action button. More detail is provided in the following help pages.
4. Click *Save and Close* to update the settings.



Sms4Domino Server Settings

This section contains global settings that are used by Sms4Domino.

Parameter	Purpose
Autostart server	When Sms4Domino is launched, either as an addin or as a standalone program, it is ready to accept console commands. (The *Help* command displays a list of available commands). However the Sms server is not yet started by default. This allows the administrator to launch some test probes on the modems. By setting the Autostart server parameter to enabled the Sms server is started automatically as soon as Sms4Domino is launched. In production environments this should be the normal mode of operations. Values ● Enabled: this is the recommended value ● Disabled
Delete messages from GSM modem	GSM modems may keep a list of all outbound SMS messages in their internal memory. When this memory is full the modem may refuse to accept further messages. Sms4Domino may delete the Sms from the memory of the modem after transmission. Values ● Enabled: this is the recommended value ● Disabled. The same message will be received multiple times from the modem.
Inbound polling interval	The inbound direction is defined as *from the GSM network into SMS4Domino.* Sms4Domino is based on SmsLib for sending and receiving Sms messages. SmsLib places inbound SMS messages (received from the GSM network) into an internal queue. This queue is polled by Sms4Domino every *Inbound interval* seconds. Setting a value too high may result in end users complaining about late reception of their SMS messages. Setting a value too low may impose unnecessary load on the server. Recommended value: 30 seconds
Outbound polling interval	The outbound direction is defined as *from Sms4Domino to the GSM network*; Requests for sending SMS messages may come from different sources. Every source is implemented by an interface. The interface places the request into an internal queue. Sms4Domino polls the queue every *outbound interval* seconds. Interfaces may accelerate the polling process by sending a signal to the polling process. As a consequence it is allowed to have a rather large outbound polling interval. Recommended value: 300 seconds
Outbound queue depth	Sms4Domino pushes outbound SMS requests into the queues managed by SmsLib. This parameter specifies how many outbound requests may be at any time in the SmsLib queues. In order to have an optimal throughput the

	queue should not be left empty when there are still outbound SMS requests present within the interfaces. Pushing too many requests into SmsLib may result in a memory overload. In case of a server crash the messages will be pushed again into the queue when Sms4Domino starts again. Recommended value: 2 * the number of outbound modems (outbound gateways)
Low priority time zone	Low priority SMS messages are sent after high and normal priority messages but may be sent at any time during the day. This setting is not used in the current release.
Accounting records	Each time an outbound SMS message has been transmitted an accounting record may be generated. Accounting records may be used for internal billing processes and give management a detailed view on the use of the server. The detailed accounting records are further aggregated into aggregated accounting documents. These aggregated figures may be used (not yet implemented) in order to impose restrictions on users for sending further SMS messages. Values ● Generate accounting records: this is the recommended value ● No accounting records
Accounting database	Accounting documents - if enabled - are created in the configuration database or another database. Either way, the database must be based on the Sms4Domino template. Specify the filepath, relative to the Domino data directory, where the database resides. The database must be located on the same server as the configuration database. Values ● leaving the field empty implies that the configuration database is used for storing accounting records. This is the mandatory setting for the current release. ● filepath (e.g. Sms4Domino\accounting.nsf) to specify a dedicated database

SmsLib Settings

Sms4Domino runs on top of the open source SmsLib library (available at smslib.org). Parameters of SmsLib are documented on the web site smslib.org. For convenience reasons the documentation has been copied into this help document.

SmsLib parameters are normally defined via java properties files. In a Domino environment administrators prefer to define parameters in Notes fields on Notes documents. Sms4Domino reads the settings from the application profile and translates them internally into SmsLib properties.

Parameter	Purpose
SERIAL_NOFLUSH	If true, SMSLib will not call the flush() system call upon writing to the serial port. This should normally be left as false, meaning that we need the flush() call. Set it to true for Linux/RxTx and virtual ports where the flush() call leads to errors Default: false
SERIAL_POLLING	If false, SMSLib will rely on the serial port interrupts to wake up and get incoming data. If true, if will create a separate thread in order to periodically poll the serial port for incoming data. Set it to true only on Linux/RxTx installations if you see that SMSLib behaves as if no modem is connected. Default: false
SERIAL_POLLING_INTERVAL	This is the polling interval. It has a meaning only when the SERIAL_POLLING is true, i.e. SMSLib works in polling mode. The value is in milliseconds. The default value is a good starting point - you may experiment with different values Default: 200ms
SERIAL_TIMEOUT	This is the master timeout set on the serial ports. The value is in milliseconds. Default: 30 000ms
SERIAL_KEEPALIVE_INTERVAL	This is the keep-alive interval. The keep-alive functionality in SMSLib periodically "pings" the modem in order to keep the connection active. The value is in seconds. Default: 60 s
SERIAL_BUFFER_SIZE	This is the buffer size SMSLib uses for the internal queues. The value represents characters (bytes). Default: 16 384 bytes
SERIAL_CLEAR_WAIT	This is a delay value, used when clearing the queues. The value is in milliseconds. Default: 1 000 ms
SERIAL_RTSCTS_OUT	If set, RTS/CTS will be enabled for outbound serial traffic as well. Useful for some types of phones

	Default: false
QUEUE_RETRIES	The retry count of the background queue manager for a message failing to be sent out. After this retry count, the queue manager will stop trying sending this message. Default: 3 times
AT_WAIT	This is a delay value, used after some AT commands. The value is in milliseconds. Default: 200 ms
AT_WAIT_AFTER_RESET	This is the delay value. SMSLib will sleep for this period after issuing a modem reset command, in order to give time to the modem to initialize. The value is in milliseconds. Default: 10 000 ms
AT_WAIT_CMD	This is a delay value, representing the time needed after issuing a "+++" command. The value is in milliseconds. Default: 1 100 ms
AT_WAIT_CGMS	This is a delay value, representing the time needed after issuing a "CMGS" command. The value is in milliseconds. Default: 200 ms
AT_WAIT_NETWORK	This is a delay value, representing the time that SMSLib will give modem in order to attach to the GSM network. The value is in milliseconds. Default: 5 000 ms
AT_WAIT_SIMPIN	This is a delay value, representing the time that SMSLib will give modem after the SIM PIN initialization. The value is in milliseconds. Default: 5 000 ms
CNMI_EMULATOR_INTERVAL	If CNMI fails, SMSLib will launch a separate thread for periodically polling the modem for inbound messages and still act as an asynchronous reader. Default: 30 s
OUTBOUND_RETRIES	This is the retry count, defining how many times SMSLib will try to send a failing message. After those retries, message will be marked as failed. Default: 3 times
OUTBOUND_RETRY_WAIT	The wait time between two attemps for sending a failed message. Value is in milliseconds. Default: 3 000 ms
WATCHDOG_INTERVAL	This is the process interval of the Service Watchdog background thread. The value is in seconds. Default: 15 s
MASK_IMSI	When true, the IMSI of the phone's/modem's SIM is not reported nor included in the logs (safety reasons). Default: true
CONCURRENT_GATEWA	When true, SMSLib will try to start all defined gateways concurrently (to speed up

Y_START	start up time). When false, gateways start one after the other. Default: true
DISABLE_CMTI	When true, SMSLib will try to disable all unsolicited inbound notifications. Most modems do not implement the unsolicited notifications correctly. We recommend disabling them. Default: true
HOURS_TO_ORPHAN	This setting defines the age (in hours) after which SMSLib will treat a message part as "orphaned". Orphaned parts are parts of a big, multipart message which are received alone and their "sister" parts were never received in order for the full message to be reconstructed. Once a message part gets older than what the setting says, the relevant notification method is called. Default: 72 hours
DISABLE_CMMS	The CMMS command (Keep GSM Link Open) is used to increase the sending rate, but may cause instability on some modems. It is set by default. Default: false
DISABLE_COPS	The COPS command is used for network selection. The default should suffice, but you can disable the use of the command. Default: false
CACHE_DIRECTORY	The generic cache directory location used by SMSLib. Default: java.home
QUEUE_DIRECTORY	The cache directory used by the Queue Manager. If left undefined, the Queue Manager acts in a non-persistent way. If you set it to a path, Queue Manager will save pending outbound messages (i.e. queued messages) and reload them between SMSLib invocations. SMS4Domino uses its own caching (in Domino databases). There is no need for an additional queue directory Default: undefined

Gateway definitions

Sms4Domino uses SmsLib for sending and receiving SMS messages. Each individual communication channel (e.g. serial modem) is defined via a Gateway document in the configuration database.

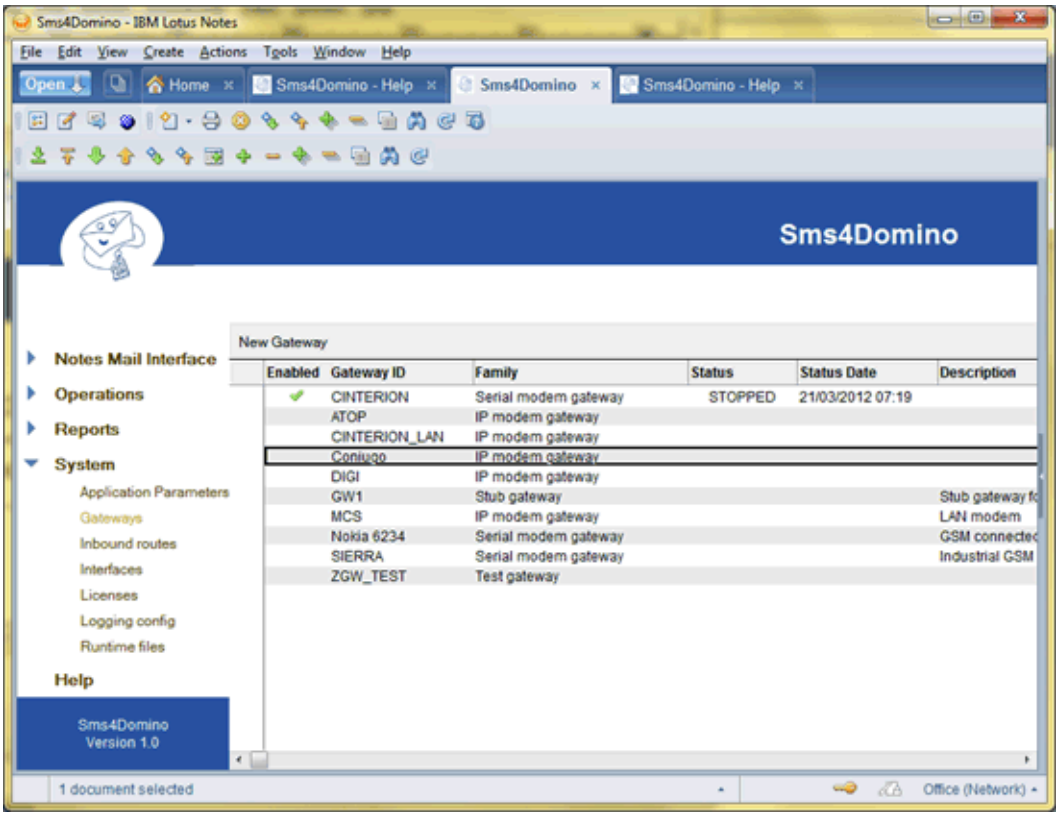
Without at least one active Gateway document Sms4Domino will not be able to start.

Sms4Domino supports different gateway types (called Gateway Family): serial modems, IP modems, Internet SMS service providers, ... Gateways may be outbound - sending SMS messages from Domino to the rest of the world - or inbound - receiving SMS messages from anywhere in the world.

The settings in the Gateway documents are read into memory when Sms4Domino starts. If you need to make changes to any of the settings you will have to quit and start the Sms4Domino application.

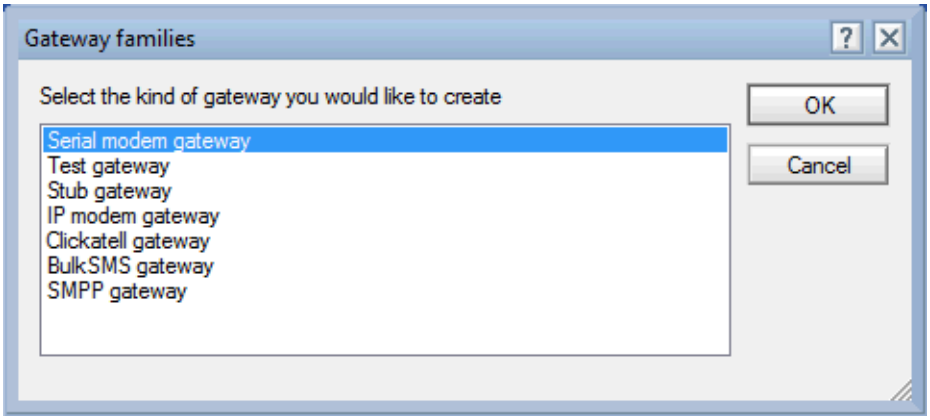
Procedure to create a Gateway document

- Open the Sms4Domino configuration database.
- Select *System -> Gateways* in the navigator. The right part of the screen displays all defined gateways.
  - Only Enabled gateways are used by Sms4Domino
  - Gateway ID must be unique. All gateway related logging uses this id
  - Family
  - The status of the enabled modems is updated in real time by Sms4Domino. This info is not valid when Sms4Domino is not running. You may need to refresh the view by clicking F9.
  - Description is not used by Sms4Domino



- Click on the action button *New Gateway* or double click on an existing Gateway document.

Select the kind of gateway that you would like to create. This cannot be changed. Consult the release notes and verify what Gateways families are supported by the current release.



Gateway document settings

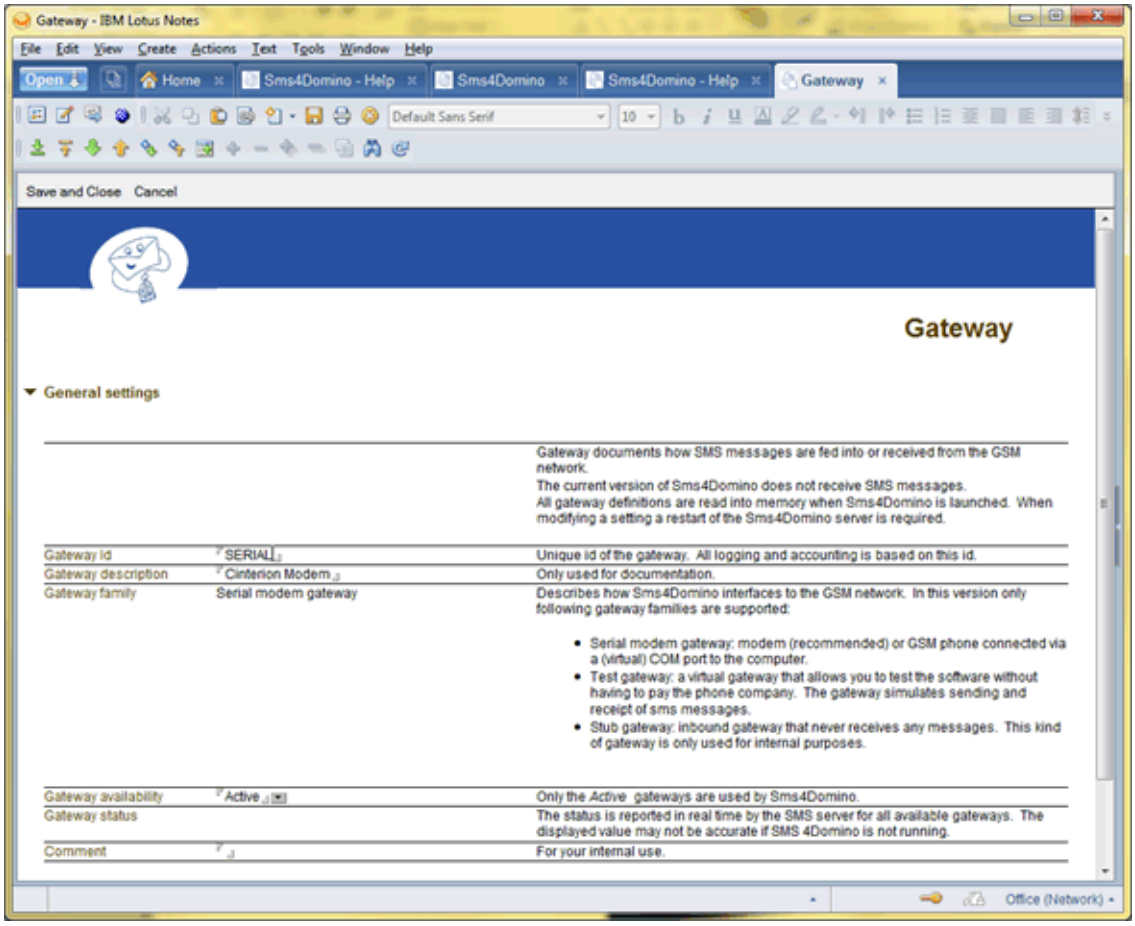
The settings are grouped in two sections: general settings that are required for all gateway families and specific settings that relate to the selected gateway family.

General settings

- Gateway id: Unique id of the gateway. All logging and accounting is based on this id.
- Gateway description: this free text field is only used by the administrator for documentation purposes.
- Gateway family: the selected gateway family. This value cannot be changed. The gateway family defines how the computer is connected to the GSM network.
  - Serial modem gateway: modem (recommended) or GSM phone connected via a (virtual) COM port to the computer. Read the help document on connecting a modem to the computer.
  - Test gateway: a virtual gateway that allows you to test the software without having to pay the phone company. The gateway simulates sending and receipt of sms messages.
  - Stub gateway: inbound gateway that never receives any messages. This kind of gateway is only used for internal purposes. There is no practical reason for you to create a stub gateway.
- Gateway availability: only *Active* gateways are used by Sms4Domino. In case of hardware problems you could disable a gateway. Remember to restart Sms4Domino after a parameter change.
- Gateway status: when Sms4Domino is started, the program will update the active gateway documents each time the status changes. The gateway status is managed by SmsLib and reported to Sms4Domino. Possible status values are
  - STARTING
  - STARTED
  - FAILURE
  - RESTART
  - STOPPING

- STOPPED

- Comment: free text field



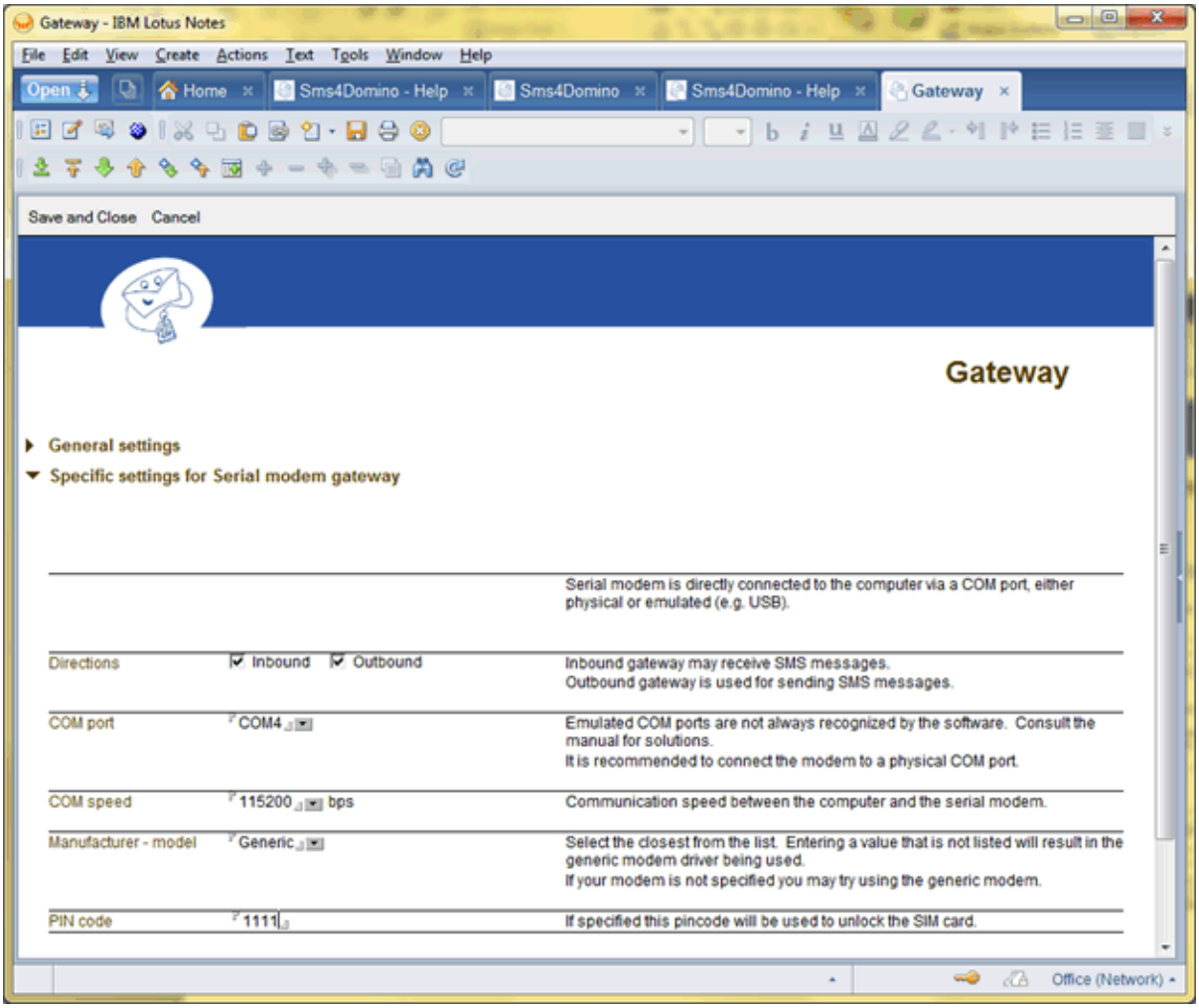
Serial Modem Gateway documents

A Serial Modem Gateway document is required when a GSM modem is connected to the server via a serial port (COM port). The physical connection may be USB, Bluetooth or using a RS-232 cable. In production environments only the RS-232 connection should be used. The other connections are less stable and require additional configuration settings.

In this document we assume the modem is connected via a RS-232 cable to a serial COM port. The modem was tested and responded with OK to the AT command.

Specific settings for Serial Modem Gateway

- Directions: specify if the modem is used for sending SMS messages (outbound) and/or receiving SMS messages (inbound)
- COM port: select the COM port from the list or enter the name of the port. The name is case sensitive and should correspond to the name reported by Windows. Do not specify the colon after the COM port name
- COM speed: this speed must correspond to the speed that the modem is using. Some modems may operate at multiple speeds. It is recommended to test the communication to the modem at the specified speed via a test program (see the help document *Choice and installation of the modem*)
- Manufacturer - model: communication between the computer and the modem is based on AT-commands. Most modems are using the same set of AT commands. Some modems deviate from the standard. Specify *Generic* if your modem is not listed.
- PIN code: the PIN code of the SIM card in the modem. Sms4Domino may lock the card if a wrong Pin code is specified. Sms4Domino has no tools to reset the Pin code.


Gateway - IBM Lotus Notes
File Edit View Create Actions Text Tools Window Help
Open
Home
Sms4Domino - Help
Sms4Domino
Sms4Domino - Help
Gateway
Save and Close Cancel
Gateway
General settings
Specific settings for Serial modem gateway
Serial modem is directly connected to the computer via a COM port, either physical or emulated (e.g. USB).
Directions
Inbound
Outbound
Inbound gateway may receive SMS messages.
Outbound gateway is used for sending SMS messages.
COM port
COM4
Emulated COM ports are not always recognized by the software. Consult the manual for solutions.
It is recommended to connect the modem to a physical COM port.
COM speed
115200
bps
Communication speed between the computer and the serial modem.
Manufacturer - model
Generic
Select the closest from the list. Entering a value that is not listed will result in the generic modem driver being used.
If your modem is not specified you may try using the generic modem.
PIN code
1111
If specified this pincode will be used to unlock the SIM card.
Office (Network)

IP Modem Gateway documents

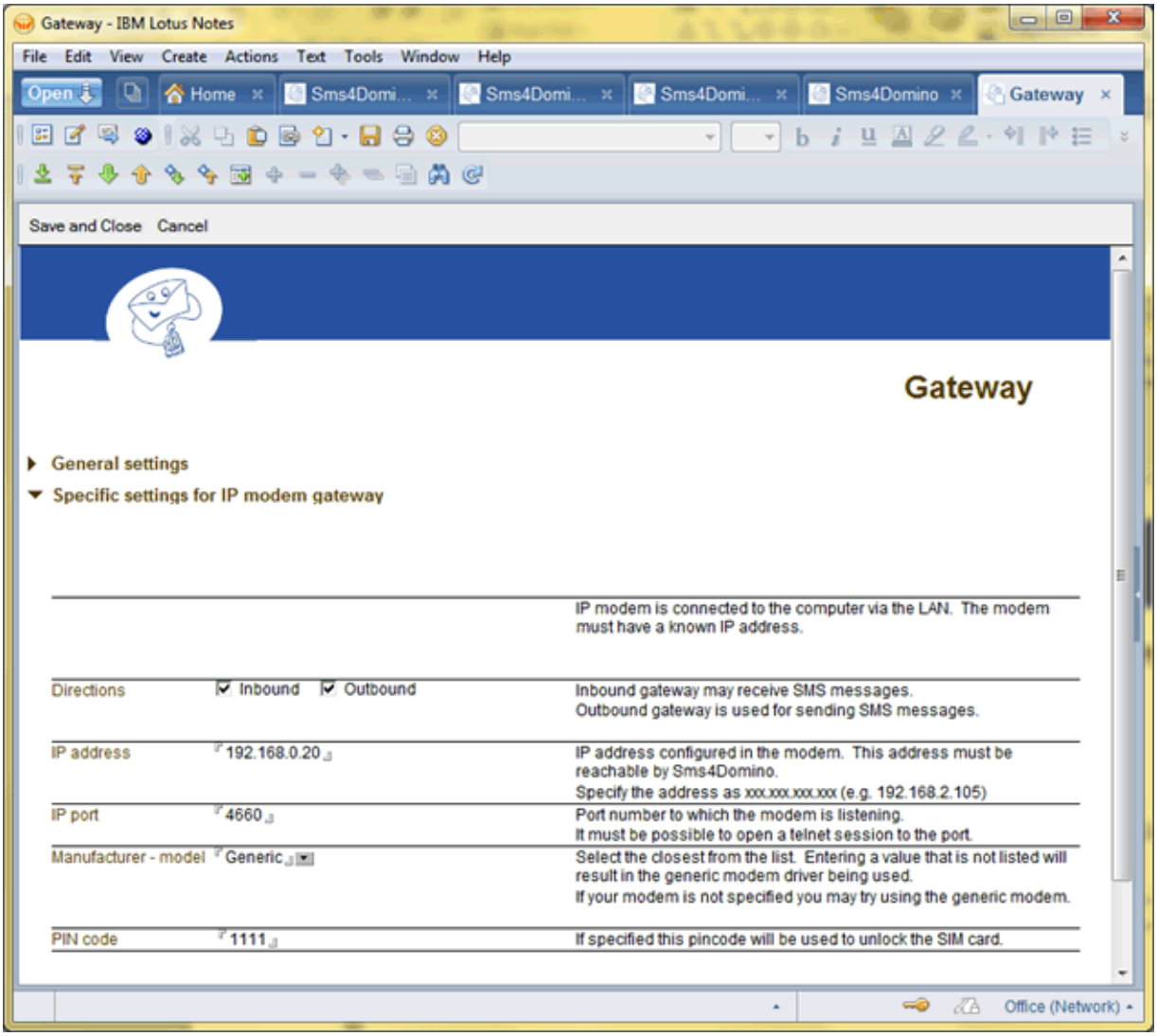
IP modems are serial modems that are connected via a serial-to-ethernet convertor. Some modems may have a build-in convertor, others require a separate box.

Sms4Domino sends and receives the same AT commands but uses TCP/IP to communicate with the modem.

Before configuring this kind of modem gateway document you should have tested the modem and configured the serial-to-ethernet convertor.

Specific settings for IP Modem Gateway

- Directions: specify if the modem is used for sending SMS messages (outbound) and/or receiving SMS messages (inbound)
- IP address: the IP address of the serial-to-ethernet convertor. It must be possible to ping this address from the machine where Sms4Domino will be running.
- IP port: the port number that has been configured in the serial-to-ethernet convertor. When issuing a telnet command (in binary mode) to the <ip address> <port> number you should be able to send AT commands and receive the responses.
- Manufacturer - model: communication between the computer and the modem is based on AT-commands. Most modems are using the same set of AT commands. Some modems deviate from the standard. Specify *Generic* if your modem is not listed.
- PIN code: the PIN code of the SIM card in the modem. Sms4Domino may lock the card if a wrong Pin code is specified. Sms4Domino has no tools to reset the Pin code.


Gateway - IBM Lotus Notes
File Edit View Create Actions Text Tools Window Help
Open
Home
Sms4Domi...
Sms4Domi...
Sms4Domi...
Sms4Domino
Gateway
Save and Close Cancel
Gateway
General settings
Specific settings for IP modem gateway
IP modem is connected to the computer via the LAN. The modem must have a known IP address.
Directions
Inbound
Outbound
Inbound gateway may receive SMS messages.
Outbound gateway is used for sending SMS messages.
IP address
192.168.0.20
IP address configured in the modem. This address must be reachable by Sms4Domino.
Specify the address as xxx.xxx.xxx.xxx (e.g. 192.168.2.105)
IP port
4660
Port number to which the modem is listening.
It must be possible to open a telnet session to the port.
Manufacturer - model
Generic
Select the closest from the list. Entering a value that is not listed will result in the generic modem driver being used.
If your modem is not specified you may try using the generic modem.
PIN code
1111
If specified this pincode will be used to unlock the SIM card.
Office (Network)

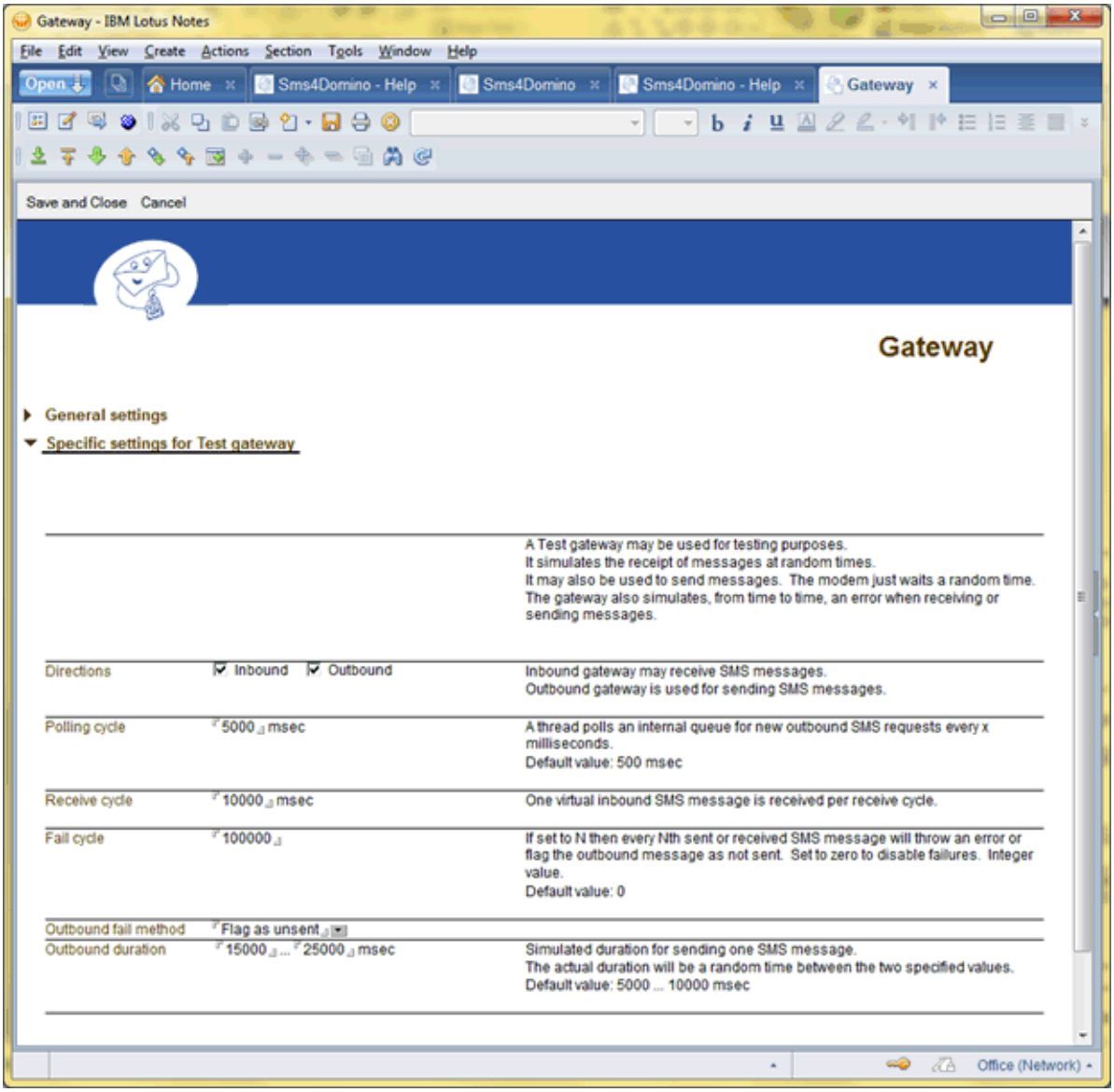
Test Gateway documents

A Test Gateway provides a low cost way for evaluating the software without incurring a cost from the phone company. Outbound test gateways pretend to send a Sms and may generate a transmission failure from time to time. Inbound test gateways pretend to receive a Sms message from time to time.

In production environments test gateways will not be used.

Specific settings for Test Gateway

- Directions: specify if the modem is used for sending SMS messages (outbound) and/or receiving SMS messages (inbound)
- Polling cycle: a thread polls an internal queue for new outbound SMS requests every x milliseconds.
- Receive cycle: only used fro inbound gateways. One virtual inbound SMS message is received per receive cycle.
- Fail cycle: If set to N then every Nth sent or received SMS message will throw an error or flag the outbound message as not sent. Set to zero to disable failures. Integer value.
- Outbound fail method: flag as unsent or throw an error.
- Outbound duration: Simulated duration for sending one SMS message. The actual duration will be a random time between the two specified values.


Gateway - IBM Lotus Notes
File Edit View Create Actions Section Tools Window Help
Open
Home
Sms4Domino - Help
Sms4Domino
Sms4Domino - Help
Gateway
Save and Close Cancel
Gateway
General settings
Specific settings for Test gateway
A Test gateway may be used for testing purposes.
It simulates the receipt of messages at random times.
It may also be used to send messages. The modem just waits a random time.
The gateway also simulates, from time to time, an error when receiving or sending messages.
Directions
Inbound
Outbound
Inbound gateway may receive SMS messages.
Outbound gateway is used for sending SMS messages.
Polling cycle
5000 msec
A thread polls an internal queue for new outbound SMS requests every x milliseconds.
Default value: 500 msec
Receive cycle
10000 msec
One virtual inbound SMS message is received per receive cycle.
Fail cycle
100000
If set to N then every Nth sent or received SMS message will throw an error or flag the outbound message as not sent. Set to zero to disable failures. Integer value.
Default value: 0
Outbound fail method
Flag as unsent
Outbound duration
15000 ... 25000 msec
Simulated duration for sending one SMS message.
The actual duration will be a random time between the two specified values.
Default value: 5000 ... 10000 msec
Office (Network)

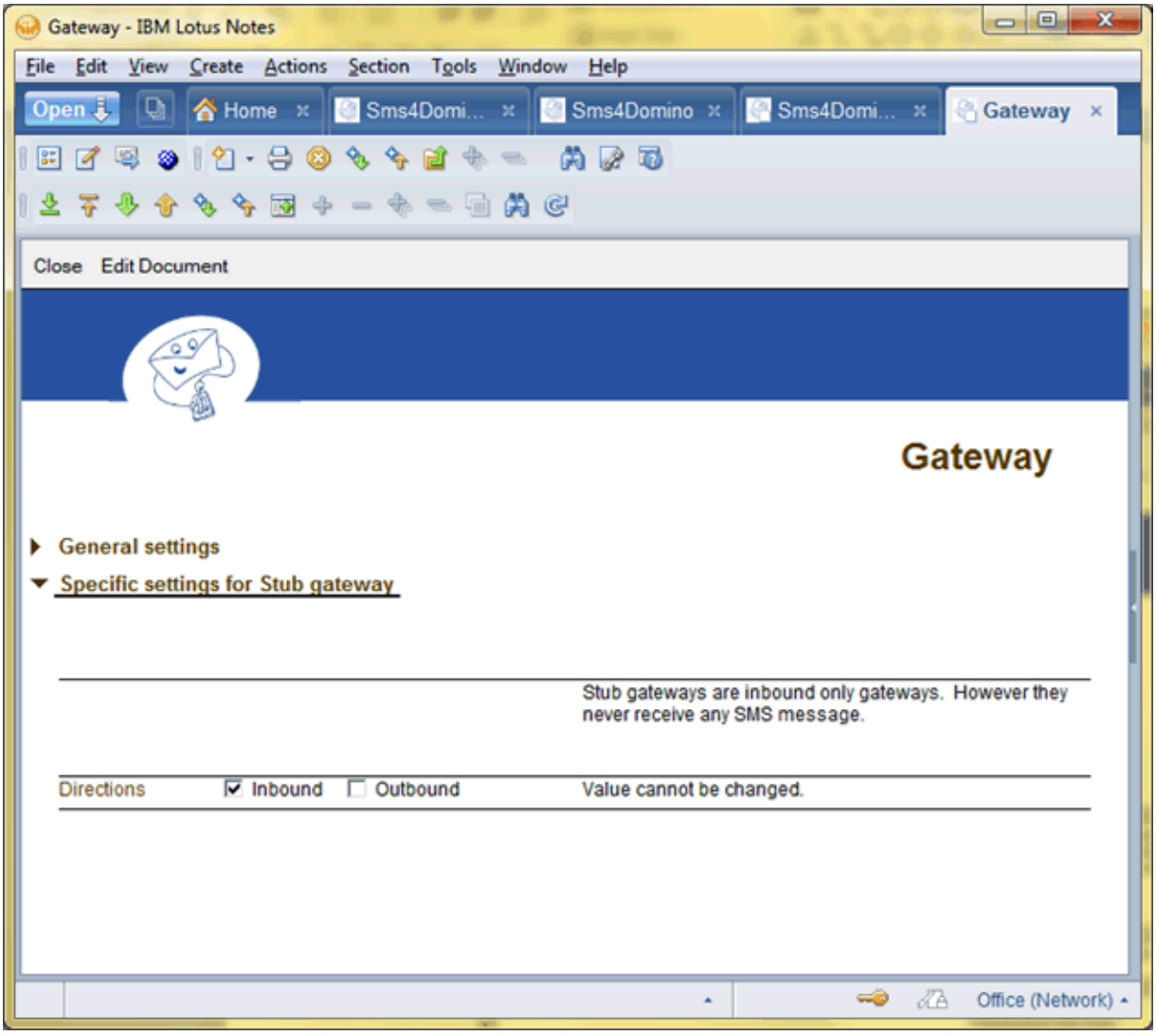
Stub Gateway documents

SmsLib, the communications package on which Sms4Domino relies, throws an error if no gateway has been defined. To avoid this unpleasant situation Sms4Domino uses a Stub gateway in case no other gateways are active.

A Stub gateway is inbound only and will never receive a message. It has no other practical use.

Specific settings for Stub Gateway

- Directions: stub gateways are always inbound and cannot be set to outbound



Interface definitions

All communications between Sms4Domino and the end users is done via Interfaces. There should be at least one active interface in the system.

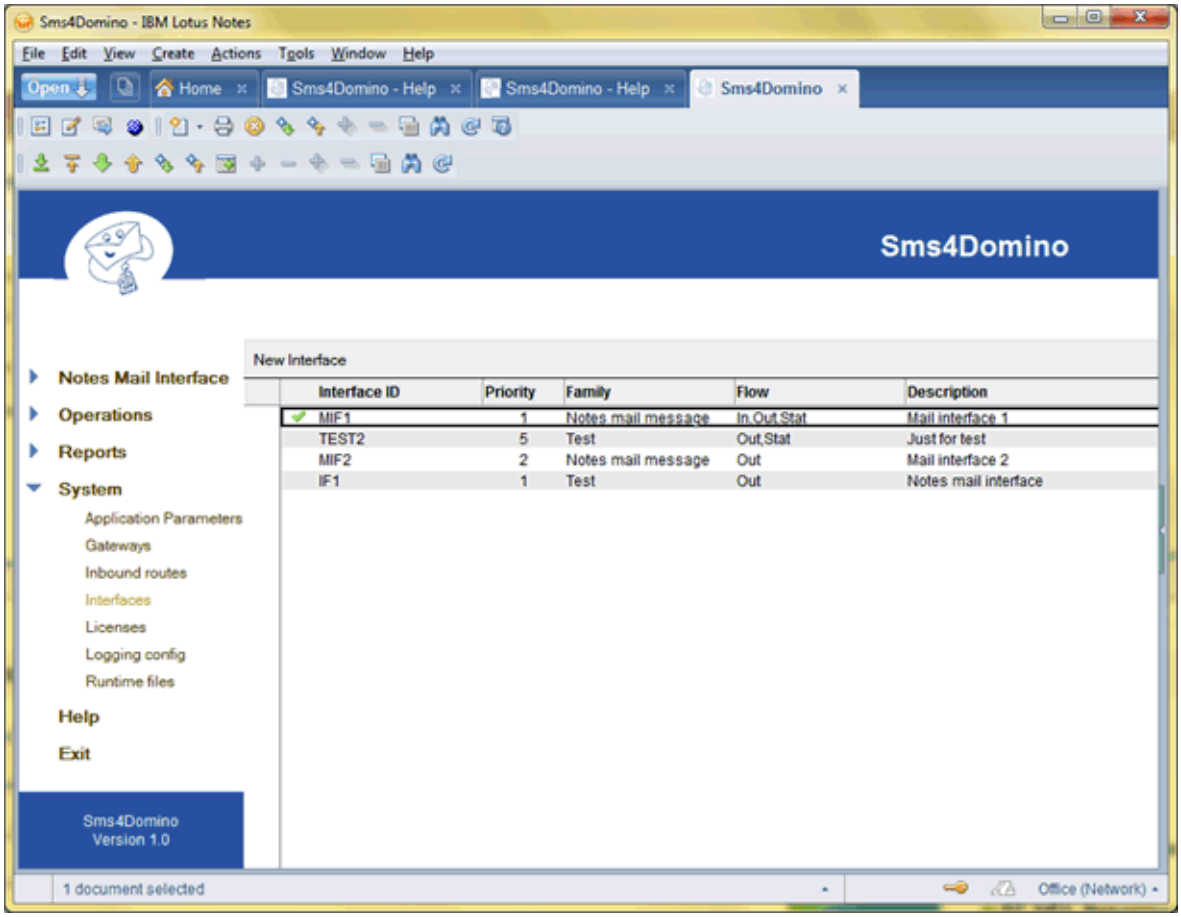
Sms4Domino supports different interface types (called Interface Family): Notes mail message, HTTP, folder monitor, ... Interfaces may be outbound - sending SMS messages from Domino to the rest of the world - or inbound - receiving SMS messages from anywhere in the world. Outbound interfaces may or may not accept the returned delivery reports.

Interfaces have a priority. Sms4Domino will poll all interfaces in order of priority for Sms messages to be sent. As such, a high priority interface could block a lower priority interface from sending Sms messages. When two interfaces have the same priority the behaviour of Sms4Domino is not deterministic.

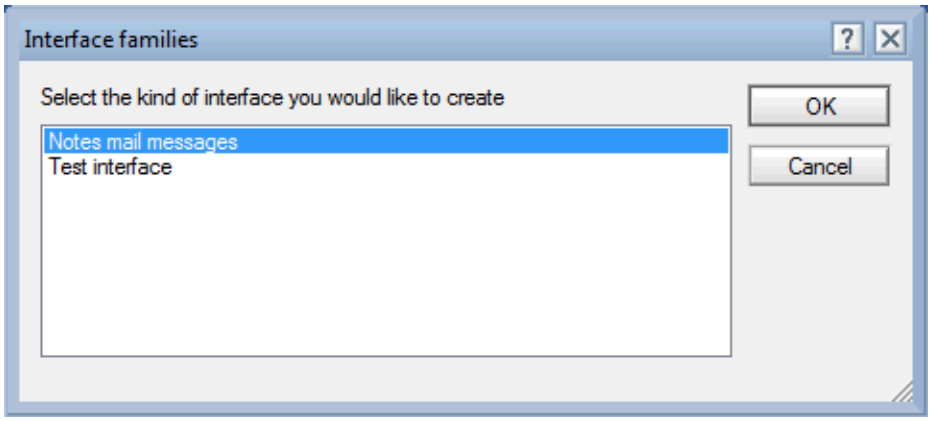
The settings in the Interface documents are read into memory when Sms4Domino starts. If you need to make changes to any of the settings you will have to quit and start the Sms4Domino application.

Procedure to create an Interface document

- Open the Sms4Domino configuration database.
- Select *System -> Interfaces* in the navigator. The right part of the screen displays all defined interfaces.
    - Only Enabled interfaces are used by Sms4Domino. The enabled interfaces are listed first in descending order of priority.
    - Interface ID must be unique. All Interface related logging uses this id
    - Priority. A high numeric value means a high priority.
    - Family
    - Flow: interface may be inbound or outbound. Outbound interfaces may accept or reject the inbound delivery reports.
    - Description is not used by Sms4Domino



- Click on the action button *New Interface* or double click on an existing Interface document. Select the kind of interface that you would like to create. This cannot be changed. Consult the release notes and verify what Interface families are supported by the current release.

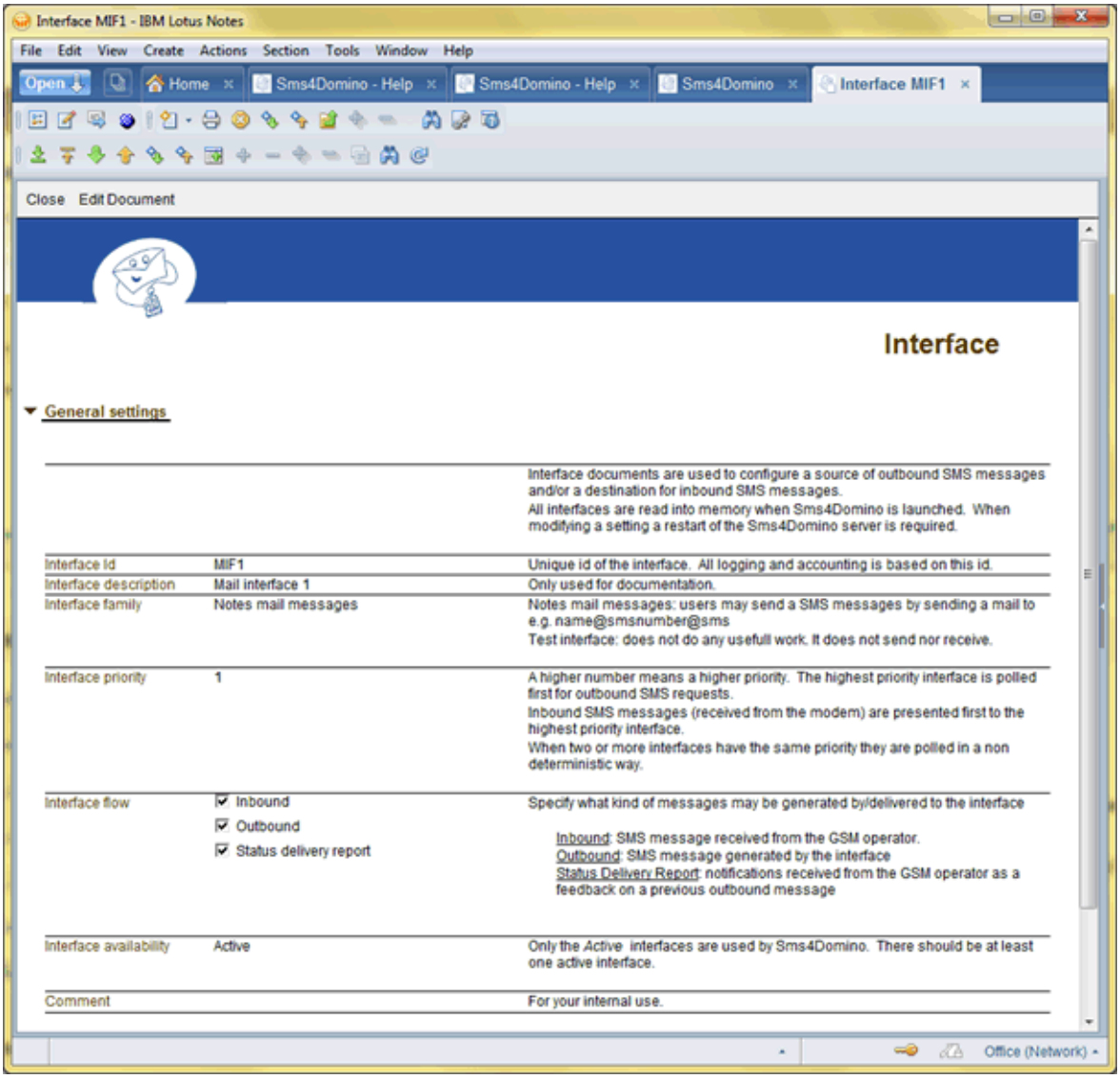


Interface document settings

The settings are grouped in two sections: general settings that are required for all interface families and specific settings that relate to the selected interface family.

General settings

- Interface id: Unique id of the interface. All logging and accounting is based on this id.
- Interface description: this free text field is only used by the administrator for documentation purposes.
- Interface family: the selected interface family. This value cannot be changed. The interface family defines how end users or systems present their requests for sending Sms messages to the Sms4Domino application.
  - Notes mail messages: end users send an email to a foreign Domino mail domain (e.g. Name@873663@sms). The mail message is converted by Sms4Domino into an outbound SMS. Delivery reports are returned via mail to the sender of the mail
  - Test interface: an interface that never generates a request for sending Sms messages. This kind of interface has no practical purpose.
- Interface priority: a higher number means a higher priority. he highest priority interface is polled first for outbound SMS requests. Inbound SMS messages (received from the modem) are presented first to the highest priority interface. When two or more interfaces have the same priority they are polled in a non deterministic way.
- Interface flow: Specify what kind of messages may be generated by/delivered to the interface
  - Inbound: SMS message received from the GSM operator.
  - Outbound: SMS message generated by the interface.
  - Status Delivery Report: notifications received from the GSM operator as a feedback on a previous outbound message
- Interface availability: only *Active* interfaces are used by Sms4Domino. Remember to restart Sms4Domino after a parameter change.
- Comment: free text field


Interface MIF1 - IBM Lotus Notes
File Edit View Create Actions Section Tools Window Help
Open
Home
Sms4Domino - Help
Sms4Domino - Help
Sms4Domino
Interface MIF1
Close Edit Document
Interface
General settings
Interface documents are used to configure a source of outbound SMS messages and/or a destination for inbound SMS messages.
All interfaces are read into memory when Sms4Domino is launched. When modifying a setting a restart of the Sms4Domino server is required.
Interface Id MIF1 Unique id of the interface. All logging and accounting is based on this id.
Interface description Mail interface 1 Only used for documentation.
Interface family Notes mail messages Notes mail messages: users may send a SMS messages by sending a mail to e.g. name@smsnumber@sms
Test interface: does not do any usefull work. It does not send nor receive.
Interface priority 1 A higher number means a higher priority. The highest priority interface is polled first for outbound SMS requests.
Inbound SMS messages (received from the modem) are presented first to the highest priority interface.
When two or more interfaces have the same priority they are polled in a non deterministic way.
Interface flow Inbound Outbound Status delivery report Specify what kind of messages may be generated by/delivered to the interface
Inbound: SMS message received from the GSM operator.
Outbound: SMS message generated by the interface
Status Delivery Report: notifications received from the GSM operator as a feedback on a previous outbound message
Interface availability Active Only the Active interfaces are used by Sms4Domino. There should be at least one active interface.
Comment For your internal use.
Office (Network)

Notes Mail Interface documents

Notes Mail Interface documents provide a means to end user and systems to send SMS messages by simply sending an email. Sms4Domino extracts the text and destination from the mail and delivers it as one or more SMS messages.

Requests for sending SMS messages are created by sending an e-mail to <name>@<gsm number>@<smsdomain> or <gsm number>@<smsdomain>. Domino mail routing routes the mail to the foreign domain <smsdomain>. A Notes database (e.g. sms.box) must be linked to the domain. The Notes mail message interface reads the mails from the foreign domain mailbox and sends them out as SMS messages.

In order to use the Notes Mail interface a foreign mail document must have been configured in the Domino directory. The procedure is explained in detail in the Domino help file. A short description is included in the Sms4Domino help file.

Inbound SMS messages are converted into a Domino mail messages and may be delivered by Notes mail to a user. Sms4Domino currently uses two systems to determine the destination for the Sms

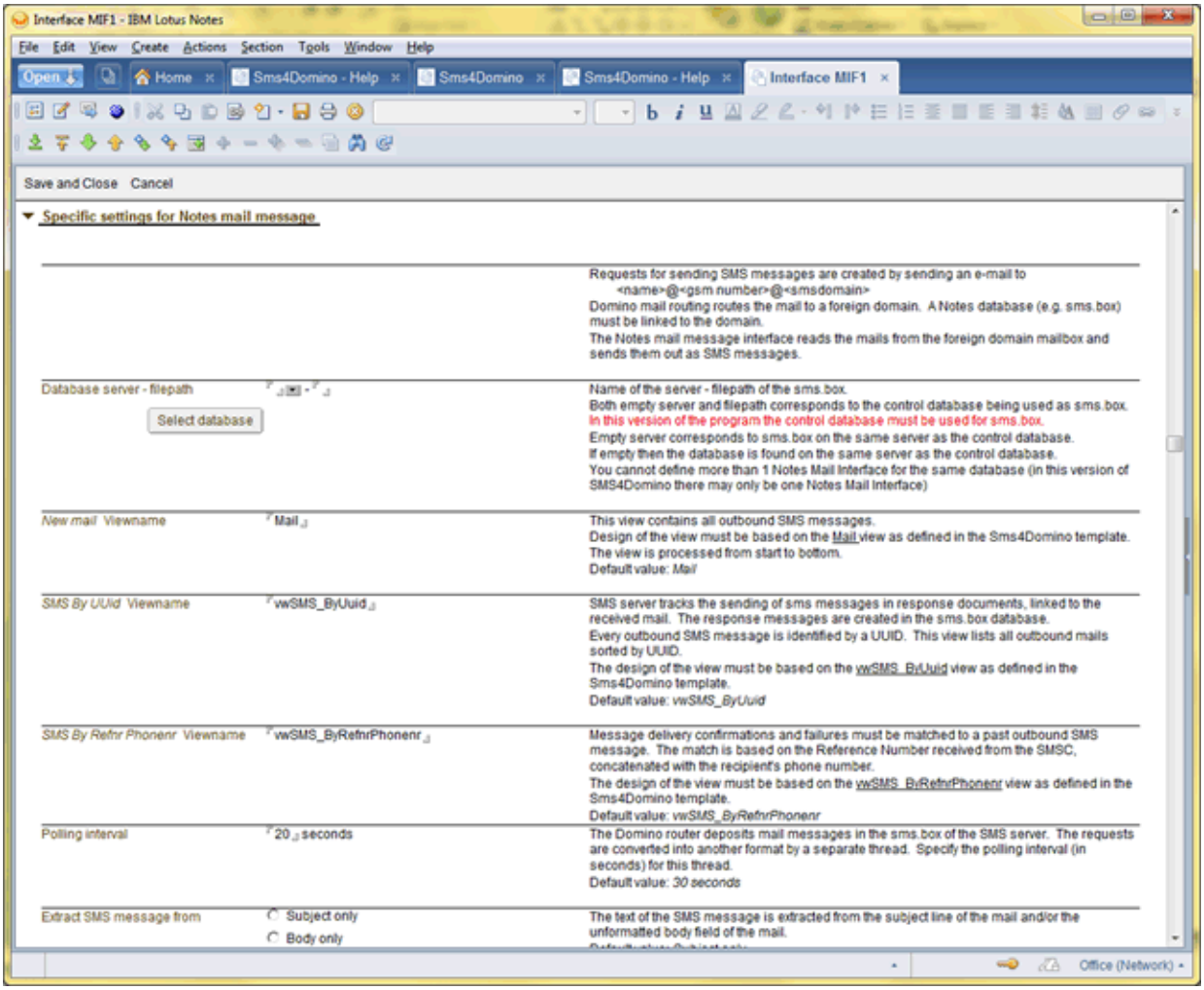
- Fixed routing: all SMS messages received from GSM number <gsm number> are route by mail to the mail address <recipient>
- Auto matching: this is best explained by an example. Assume John sends a SMS via Sms4Domino to Paula (Paula@0475321825@sms). When Sms4Domino receives a SMS from Paula's GSM within a given timeframe, Sms4Domino assumes that it is a reply for John and will send an e-mail to John. However if Paula is very popular and receives Sms messages from John, Bill and David. When a reply is received from Paula, Sms4Domino is not able to determine the destination. The Sms is kept in the system and should be forwarded manually.

Specific settings for Notes Mail message

- Database server & filepath: Name of the server - filepath of the sms.box.
  - Leaving both fields empty corresponds to the control database being used as sms.box. This is the only acceptable setting for this release.
  - Leaving the server name empty corresponds to sms.box on the same server as the control database.
  - You cannot define more than 1 Notes Mail Interface for the same database (in this version of SMS4Domino there may only be one Notes Mail Interface)
  - The database must be based on the Sms4Domino template and not on the standard Domino mail router template. If needed, a custom made template could be used. However this template must contain a specific set of views (see next)
  - Sms4Domino program must have editor level access or higher to the database and the right to delete documents.
- New mail viewname: the Notes Mail interface scans at regular intervals this view for mails that must be transmitted as SMS. The view must have the same layout as the view *Mail* in the Sms4Domino template. The view is processed from top to bottom.
- Sms By Uuid viewname: SMS server tracks the sending of sms messages in response documents, linked to the received mail. The response messages are created in the sms.box database. Every outbound SMS message is identified by a UUID. This view lists all outbound mails sorted by UUID. The design of the view must be based on the *vwSMS_ByUuid* view as defined in the Sms4Domino template.
- Sms By Refnr PhoneNr viewname: Message delivery confirmations and failures must be matched to a past outbound SMS message. The match is based on the Reference Number received from the SMSC, concatenated with the recipient's phone number. The design of the view must be based on the *vwSMS_ByRefnrPhonenr* view as defined in the

Sms4Domino template.

- Polling interval: the Domino router deposits mail messages in the sms.box of the SMS server. The requests are converted into another format by a separate thread. Specify the polling interval (in seconds) for this thread.
- Extract SMS messages from: SMS messages are text only. The contents will be extracted from either the subject, the unformatted body of the mail or the subject followed by the unformatted body of the mail. It is also possible to specify a @formula. The formula is executed in the context of the received mail. Some default formulas may be inserted by clicking an action.
- Truncate to: The resulting message is truncated to the specified size. If <= 0 then no truncation occurs. It is strongly recommende to specify some safety value. Large messages may result in a multi-message SMS.
- Outbound SMS retention time: when a delivery report (failure or confirmation) is received from the SMSC, it must be matched with an outbound SMS. Outbound SMS messages are deleted automatically. Delivery reports received after this deletion will not be delivered to the end user. The retention time parameters are expressed as positive integer multiples of the polling interval.
  - Test every n polling intervals: the test for outbound messages that must be deleted is performed every n polling intervals. A value too high could result in too many old messages in sms.box. A value too low could overload the server.
  - No delivery report requested: even when no delivery reports is requested it could happen that a negative delivery report is received. Negative value implies no automatic deletion. Zero value implies automatic deletion after sending the SMS.
  - Delivery report requested: it could take some hours or days before the delivery report is received. Negative value implies no automatic deletion. Zero value implies automatic deletion after sending the SMS.
- Pseudo sender: mail address used as sender when Sms4Domino returns an email (e.g. delivery report) to a Notes user


Interface MIF1 - IBM Lotus Notes
File Edit View Create Actions Section Tools Window Help
Open
Home
Sms4Domino - Help
Sms4Domino
Sms4Domino - Help
Interface MIF1
Save and Close Cancel
Specific settings for Notes mail message
Requests for sending SMS messages are created by sending an e-mail to
<name>@<gsm number>@<smsdomain>
Domino mail routing routes the mail to a foreign domain. A Notes database (e.g. sms.box) must be linked to the domain.
The Notes mail message interface reads the mails from the foreign domain mailbox and sends them out as SMS messages.
Database server - filepath
Select database
Name of the server - filepath of the sms.box.
Both empty server and filepath corresponds to the control database being used as sms.box.
In this version of the program the control database must be used for sms.box.
Empty server corresponds to sms.box on the same server as the control database.
If empty then the database is found on the same server as the control database.
You cannot define more than 1 Notes Mail Interface for the same database (in this version of SMS4Domino there may only be one Notes Mail Interface)
New mail Viewname
Mail
This view contains all outbound SMS messages.
Design of the view must be based on the Mail view as defined in the Sms4Domino template.
The view is processed from start to bottom.
Default value: Mail
SMS By UUid Viewname
vwSMS_ByUuid
SMS server tracks the sending of sms messages in response documents, linked to the received mail. The response messages are created in the sms.box database.
Every outbound SMS message is identified by a UUID. This view lists all outbound mails sorted by UUID.
The design of the view must be based on the vwSMS_ByUuid view as defined in the Sms4Domino template.
Default value: vwSMS_ByUuid
SMS By Refnr Phonenr Viewname
vwSMS_ByRefnrPhonenr
Message delivery confirmations and failures must be matched to a past outbound SMS message. The match is based on the Reference Number received from the SMSC, concatenated with the recipient's phone number.
The design of the view must be based on the vwSMS_ByRefnrPhonenr view as defined in the Sms4Domino template.
Default value: vwSMS_ByRefnrPhonenr
Polling interval
20 seconds
The Domino router deposits mail messages in the sms.box of the SMS server. The requests are converted into another format by a separate thread. Specify the polling interval (in seconds) for this thread.
Default value: 30 seconds
Extract SMS message from
Subject only
Body only
The text of the SMS message is extracted from the subject line of the mail and/or the unformatted body field of the mail.
Office (Network)

Phone number preprocessing

Introduction

End users may specify the phone number in different ways. The number 0474 96 11 11 in Belgium (country code 32) may be known as

+32474961111

0032/(474) 96 11 11

0474-96.11.11

For the correct matching of future inbound SMS messages with the outbound SMS it is essential to convert SMS numbers to a standard representation. Sms4Domino uses the international number format as a standard representation. This is composed of the plus (+) sign, the country code (1, 2 or 3 digits) followed by the local number.

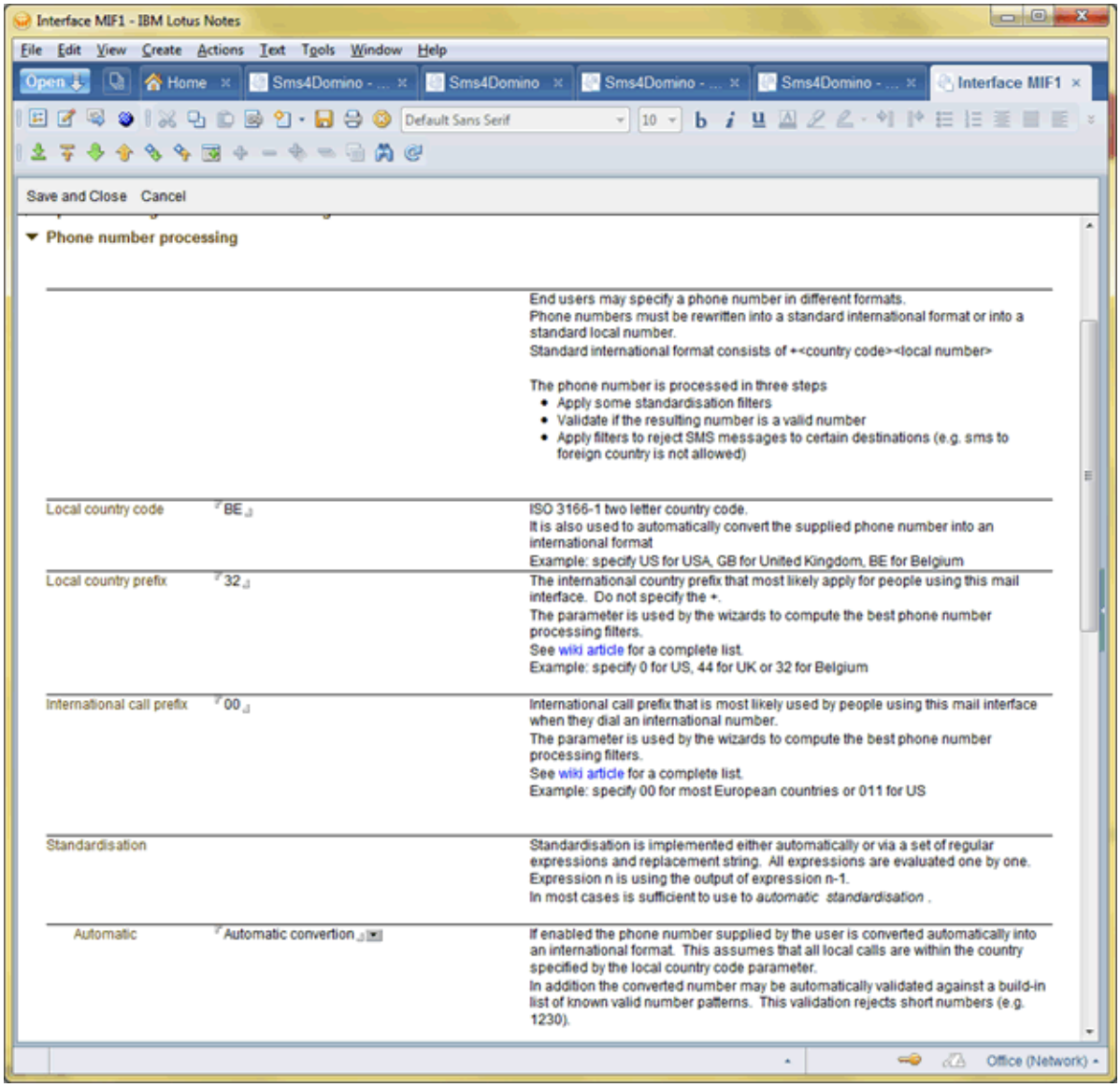
End users may specify a badly formatted number (e.g. containing letters or too short). In case of obvious errors the SMS request should not be routed to the modem but must be returned immediately as a non delivery failure.

The administrator may impose restrictions on the allowed destinations. In the current release these restrictions are imposed at the level of the interface and will be applied to all users.

Details

The preprocessing of phone numbers is executed in a number of consecutive steps:

- Automatic convertion to the international number format. Optional reject of mall-formed numbers. The automatic convertion is based on the open source code of Google.
- Ad-hoc convertion using a set of regular expressions.
- Validation of the result. The resulting number should match a regular expression
- Imposing restrictions on the resulting number. This is implemented using whitelist or blacklist regular expressions

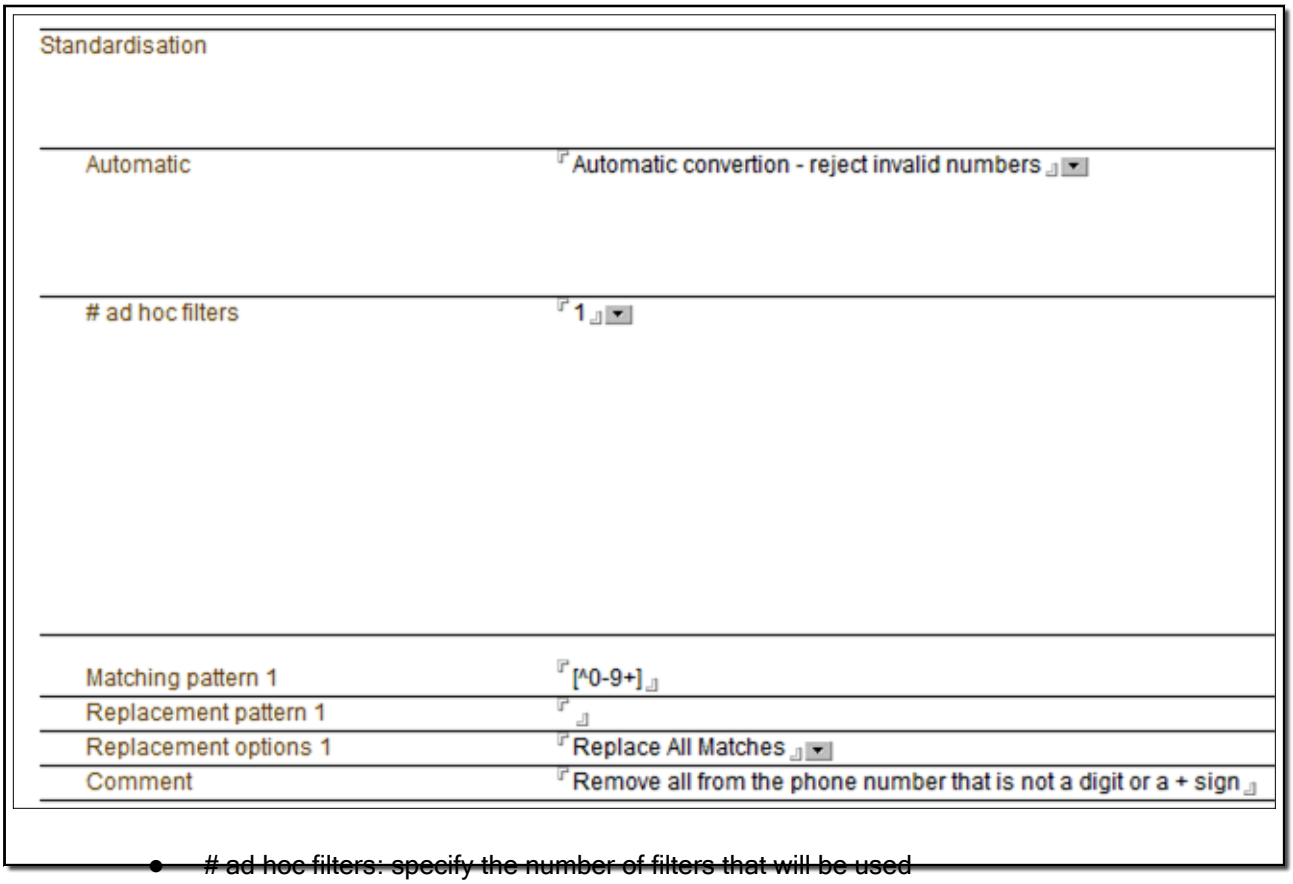


We will now explain all the available settings in the *Phone number processing* section of the mail interface document.

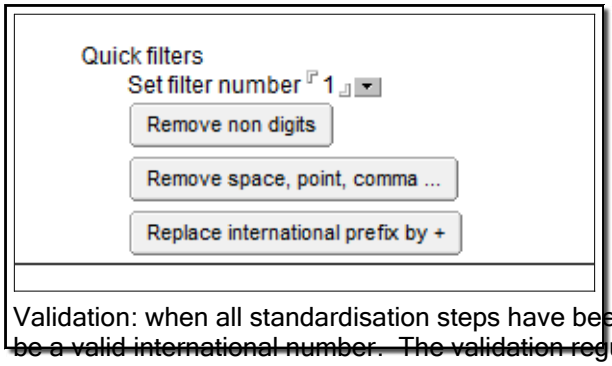
- Local country code: the automatic convertion logic needs to know the local two-letter country code. When the user specifies a local number (e.g. 0474961111) it will be converted into +<country prefix><local number> (e.g. +32474961111). The list of country codes is maintained by www.iso.org.
- Local country prefix: the pre-configured actions for manual convertion depend on the knowledge of the country prefix (1, 2 or 3 digits). The list of prefixes is documented in a Wiki Article (http://en.wikipedia.org/wiki/List_of_mobile_phone_number_series_by_country)
- International call prefix: some end-users specify an international number as <international call prefix><country prefix><local number> (e.g. 0032474961111). Some of the pre-configured actions for manual convertion are using this field in order to convert this prefix to the + sign.
- Standardisation
  - The automatic standardisation (based on Google's code) may be enabled or disabled. The logic may be applied in any of the following flavors
    - Do not perform automatic convertion
    - Convert the number automatically
    - Convert the number automatically and reject numbers that are most likely invalid. For example Google may know that phone numbers in Belgium do not start with

0411. So it will reject the local number 0411961111. However we cannot guarantee that Google's knowledge will remain up to date. This option could prove to be too restrictive.

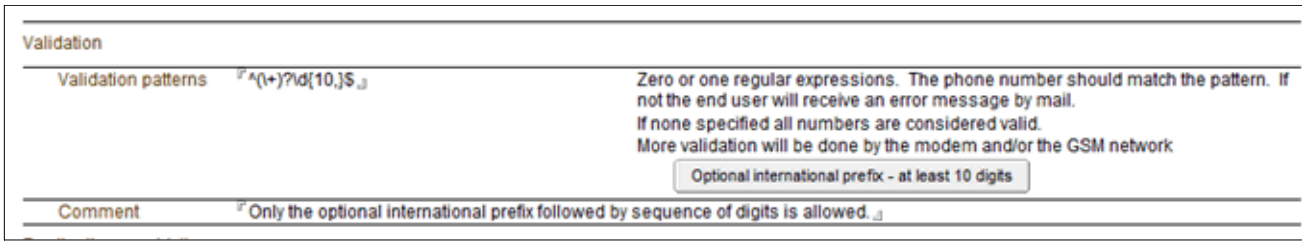
- Manual convertion may be performed as a next step. It is configured as a set of filters (0 to 10 filters). Each filter will act on the result of the previous one



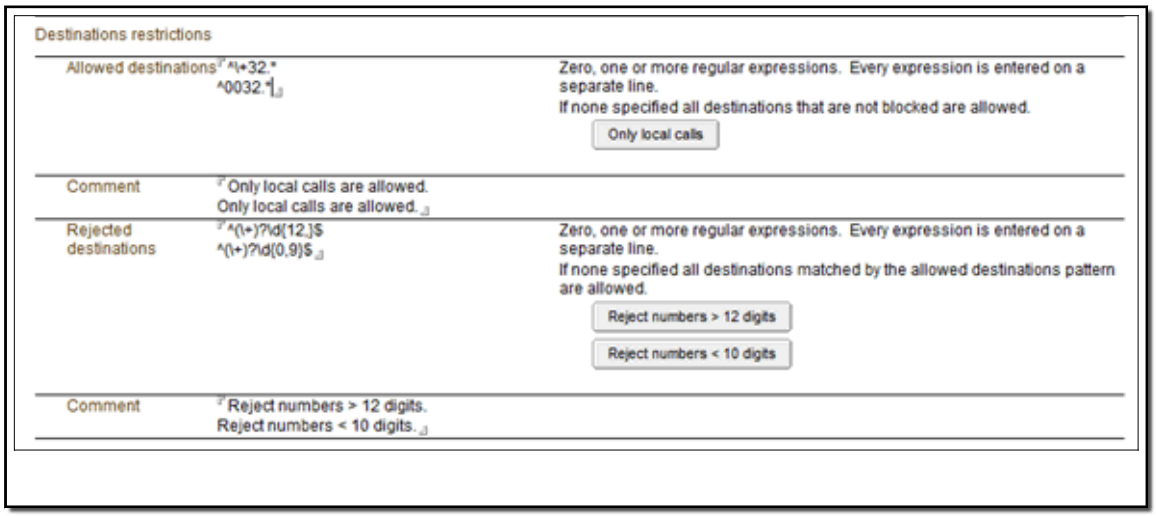
  - # ad hoc filters: specify the number of filters that will be used
  - Each filter is based on Java regular expressions. The matching pattern tests if the phone number contains a specified pattern. If so the matched substring is replaved by the replacement pattern. Replacement options specify if only the first match or all matches must be replaced. The comment field is not used by Sms4Domino.
    Working with Java regular expressions require some Java knowledge. The interface document contains some commonly used filters



- Validation: when all standardisation steps have been applied the resulting number should be a valid international number. The validation regular expression specifies the format for a valid number.



- ~~Destination restrictions: in this section you specify regular expressions for the patterns~~ that are allowed (e.g. only sms to the local country -> ^\+32.*) or that are rejected. More than one pattern may be specified. In case no pattern is specified the test is not performed. The regular expressions are easy to write as we know that the phone number is now in the international format.



Inbound SMS processing

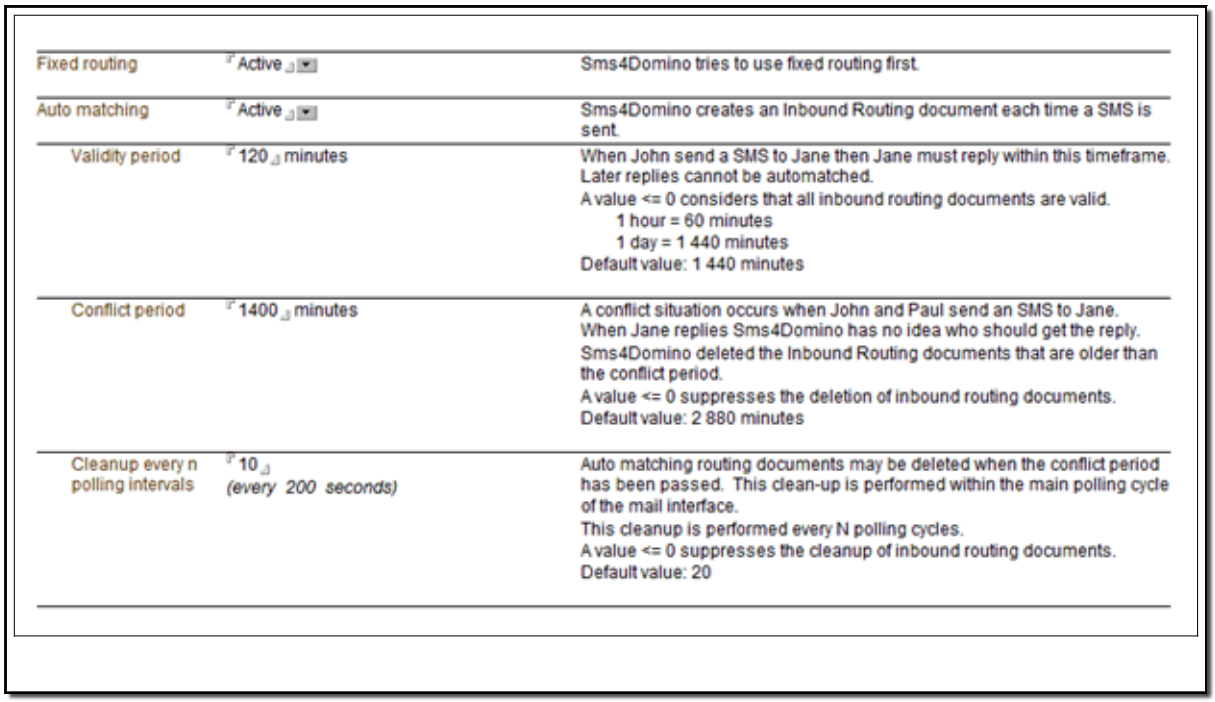
Sms4Domino presents all received Sms messages to every interface. Each interface decides if the Sms can be received. If none of the interfaces is capable of handling the inbound Sms, the Sms is stored in the configuration database (view *Operations -> Received - no match*)

Sms4Domino mail interfaces may use two methods for matching inbound Sms messages to a Lotus Notes mail user:

- Fixed routing: all Sms messages from a specified phone number should be routed to a fixed mail address. This mail address can be any valid Lotus Domino address. The fixed routing documents are visible in the view *System -> Inbound routes*.
- Auto matching routing: this automatic routing is based on the assumption that, when person x sends an Sms to person y it is very likely that a reply from y should be routed to person x. For each outbound Sms message, Sms4Domino creates a auto matching route. This document specifies that Notes user x has sent a Sms to number y. When a inbound Sms is received all routing documents are consulted based on the sender's phone number. Three outcomes are possible
  - No match: the inbound Sms cannot be delivered
  - Single match: in inbound Sms is routed by Domino mail to user x
  - Multiple matches for different users: there is a conflict. The Sms is stored in the configuration database (view *Operations -> Received - no match*)

Auto routing documents are removed automatically after a specified number of hours. This action is performed by the main polling thread of the mail interface.

All settings are documented in the Interface document.



Fixed routing	Active	Sms4Domino tries to use fixed routing first.
Auto matching	Active	Sms4Domino creates an Inbound Routing document each time a SMS is sent.
Validity period	120 minutes	When John send a SMS to Jane then Jane must reply within this timeframe. Later replies cannot be automatched. A value <= 0 considers that all inbound routing documents are valid. 1 hour = 60 minutes 1 day = 1 440 minutes Default value: 1 440 minutes
Conflict period	1400 minutes	A conflict situation occurs when John and Paul send an SMS to Jane. When Jane replies Sms4Domino has no idea who should get the reply. Sms4Domino deleted the Inbound Routing documents that are older than the conflict period. A value <= 0 suppresses the deletion of inbound routing documents. Default value: 2 880 minutes
Cleanup every n polling intervals	10 *(every 200 seconds)*	Auto matching routing documents may be deleted when the conflict period has been passed. This clean-up is performed within the main polling cycle of the mail interface. This cleanup is performed every N polling cycles. A value <= 0 suppresses the cleanup of inbound routing documents. Default value: 20

Server license settings

All license settings are found via *System -> Licenses*.

Sms4Domino looks at regular intervals for the presence of a valid license. License information is stored, as a signed human readable text string, in a license document. The Sms4Domino configuration database could hold multiple license documents (in order to support multi server deployments).

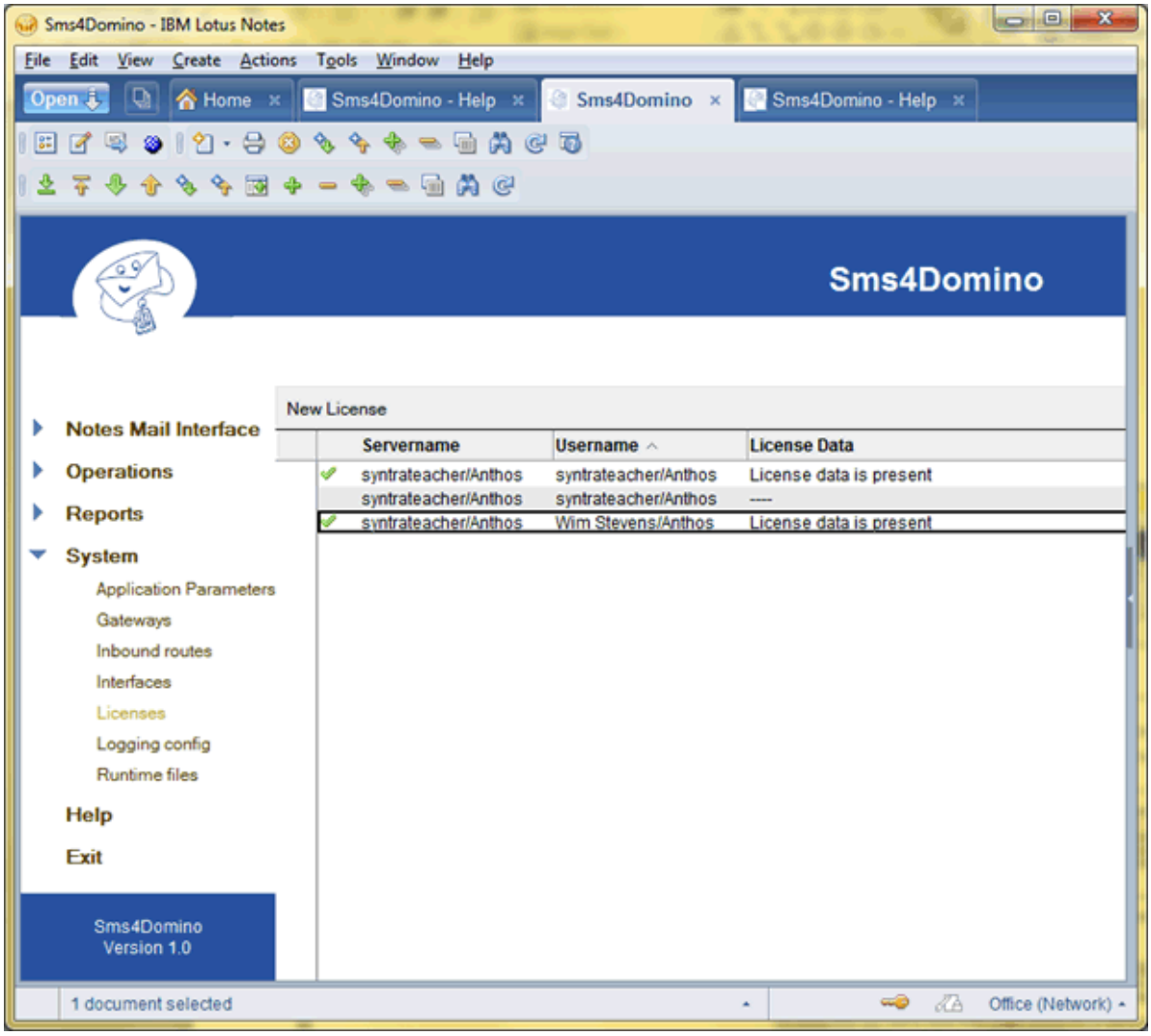
The validity of a license may depend on multiple factors. Typical elements are

- Servername where the configuration database is stored
- User-id that runs Sms4Domino
- Number of active inbound or outbound gateways defined by the configuration database
- Expiration date of the license. The current date must be before this expiration date
- Release date of Sms4Domino. The release date of the running Sms4Domino program must be before this release date
- Number of Notes Mail Interfaces defined by the configuration database
- Number of Test gateways defined by the configuration database.

A typical evaluation license that could be downloaded from the website grants everybody the right to run Sms4Domino with one Test Gateway and one Notes Mail Interface.

Procedure to create a license document

- Open the Sms4Domino configuration database.
- Select *System -> Licenses* in the navigator. The right part of the screen displays all defined license documents
    - Only Active license documents are used by Sms4Domino. They have a green check mark
    - Servername: when the configuration database is located on server x then Sms4Domino looks for a license docuemnt for servername x
    - Username: when Sms4Domino runs under the credentials of user A then Sms4Domino looks for a license document for user A
    - License data: indication if a license file has been loaded into the document



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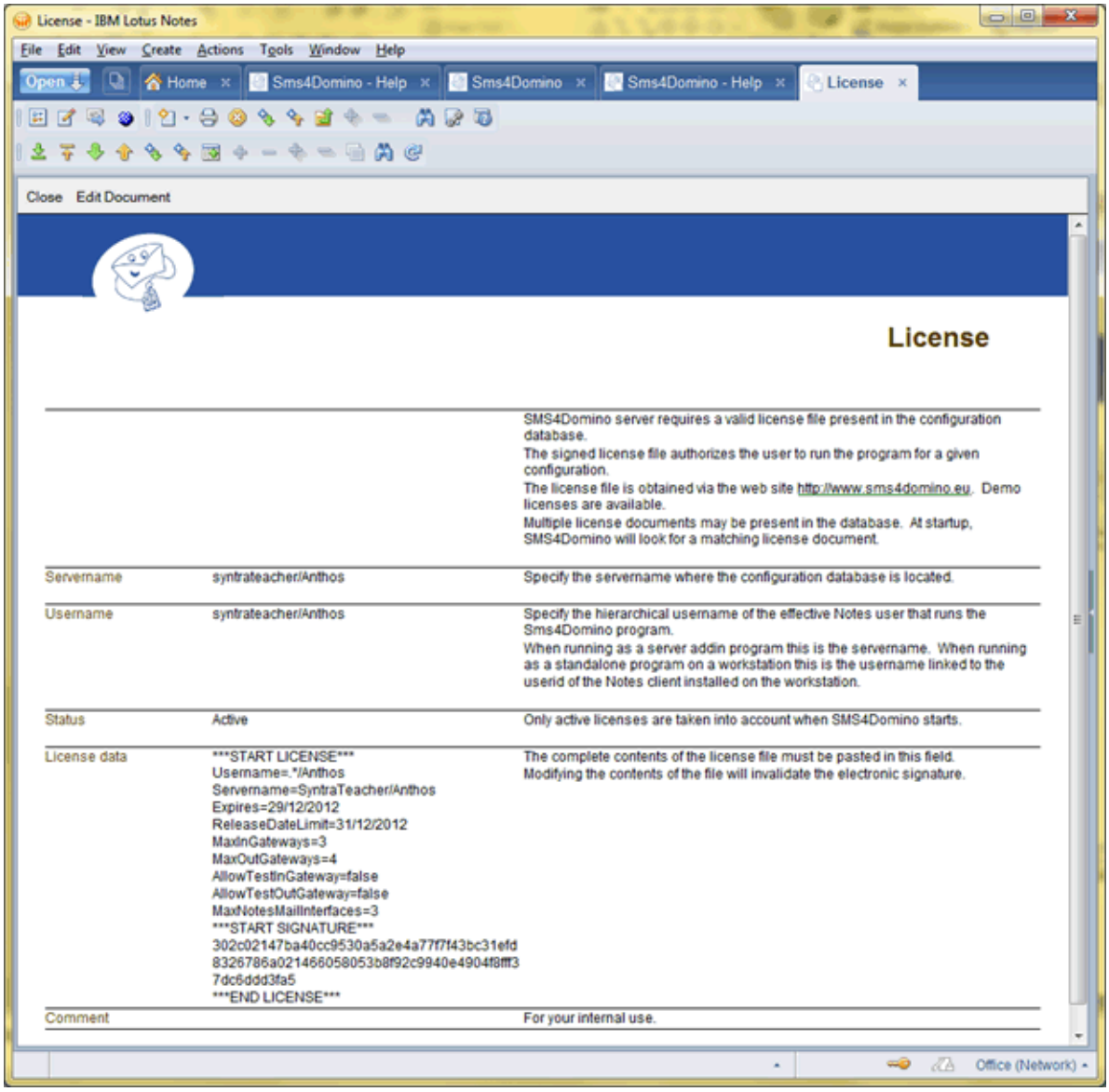
License document settings

- Servername - Username: Sms4Domino looks for an active license document that corresponds to the servername where the configuration database is stored and to the Lotus Notes username (or servername) executing Sms4Domino. When Sms4Domino runs as a server based add-in on the server that holds the configuration database both servername and username specify the name of the server.
- Status: active or not used. There should only be one active license document for a given servername/username combination
- License data: contents of the license file that was received at time of purchase. The license file may be opened with a text editor. However, changing a single character will invalidate the signature. License files without a valid signature will not be accepted by Sms4Domino. The license file may contain wildcard settings. When you receive the license file you must open it with a text editor (e.g. Notepad), select all text and paste the text in the field.
  Text before the ***START LICENSE*** header or after the ***END LICENSE*** footer is ignored during the validation of the license.


License - IBM Lotus Notes
File Edit View Create Actions Tools Window Help
Open
Home
Sms4Domino - Help
Sms4Domino
Sms4Domino - Help
License
Close Edit Document
License
SMS4Domino server requires a valid license file present in the configuration database.
The signed license file authorizes the user to run the program for a given configuration.
The license file is obtained via the web site http://www.sms4domino.eu. Demo licenses are available.
Multiple license documents may be present in the database. At startup, SMS4Domino will look for a matching license document.
Servername
syntrateacher/Anthos
Specify the servername where the configuration database is located.
Username
syntrateacher/Anthos
Specify the hierarchical username of the effective Notes user that runs the Sms4Domino program.
When running as a server addin program this is the servername. When running as a standalone program on a workstation this is the username linked to the userid of the Notes client installed on the workstation.
Status
Active
Only active licenses are taken into account when SMS4Domino starts.
License data
START LICENSE
Username=.*/Anthos
Servername=SyntraTeacher/Anthos
Expires=29/12/2012
ReleaseDateLimit=31/12/2012
MaxInGateways=3
MaxOutGateways=4
AllowTestInGateway=false
AllowTestOutGateway=false
MaxNotesMailInterfaces=3
START SIGNATURE
302c02147ba40cc9530a5a2e4a77f7f43bc31efd
8326786a0214660580536b8f92c9940e4904f8fff3
7dc6ddd3fa5
END LICENSE
The complete contents of the license file must be pasted in this field.
Modifying the contents of the file will invalidate the electronic signature.
Comment
For your internal use.
Office (Network)

How to amend a license ?

License files may contain an expiration date. At some point in time it could be necessary to renew the license.

Procedure

1. Sms4Domino runs based on the settings of the current active license document
2. A new license document may be configured for the same user and server. The status of this document should be "Inactive"
3. When the new license file has been received and loaded into the license document the administrator should
   - Modify the status of the current active license document to "Inactive". Save and close the document.
   - Modify the status of the newly created license document to "Active". Save and close the document.
   - Restart Sms4Domino

Error messages during license validation

When Sms4Domino is started the license is validated. In case of a missing license following messages are logged on the Domino console

21:12:16,580 SmsServer is ready to be configured and started. TRACE
21:12:16,586 Current configuration violates license conditions: 0 active license documents found for user-server XXXX-YYYY. Should be 1. FATAL
21:12:16,588 SMS4Domino is NOT started FATAL
Application will close in 15 seconds.

In case of an error in the signature the logging becomes

21:15:30,894 SmsServer is ready to be configured and started. TRACE
21:15:31,016 Unexpected error during validation of signature. Stack trace follows: ERROR
java.security.SignatureException: invalid encoding for signature :java.io.IOException: Sequence tag error
at com.ibm.crypto.provider.SHA1withDSA.engineVerify(Unknown Source)
at java.security.Signature$SignatureImpl.engineVerify(Signature.java:467)
at java.security.Signature.verify(Signature.java:287)
at
be.sms4domino.licensing.LicenseSignature.isValidSignature(LicenseSignature.java:88)
at
be.sms4domino.licensing.License.loadActiveLicenseFromDomino(License.java:174)
at be.sms4domino.server.DominoSmsServer.<init>(DominoSmsServer.java:64)
at be.sms4domino.server.DominoSmsServer.getInstance(DominoSmsServer.java:76)
at Sms4DominoStandalone.runNotes(Sms4DominoStandalone.java:154)
at lotus.domino.NotesThread.run(Unknown Source)
21:15:31,017 Current configuration violates license conditions: Signature in license data is invalid. User-server XXXX-YYYY FATAL
21:15:31,018 SMS4Domino is NOT started FATAL
Application will close in 15 seconds.

The license will be checked at regular times to make sure the expiration date has not been passed.

Logging settings

Sms4Domino makes use of the open source library log4j for all logging. This framework provides a very flexible and performant logging system. Plenty of background information is available on the Internet. We recommend you to visit the web site http://logging.apache.org/log4j/1.2/.

As an administrator you have almost full control over what info should be logged and what should be the output for the logging. We will describe some typical configurations in this help document.

The configuration of log4j is done via properties files (text files comparable to notes.ini). Sms4Domino makes use of Notes documents to define the configuration of the logging. These documents are read by Sms4Domino and converted into log4j properties.

The log settings may be modified at any time. The Sms4Domino command *refresh logging* reads the updated configuration from the configuration database and modifies the active log4j settings accordingly.

Some log4j concepts

- logger: applications that use log4j direct all logging output to one or more named loggers. The logger name space forms a hierarchical system that starts at the top with the root logger. When an application produces some log info it specifies the name of the logger and the severity (or log level) of what is being logged. Possible log levels are
  - FATAL
  - ERROR
  - WARN
  - INFO
  - DEBUG
  - TRACE
- appender: log4j directs the output of the log statements to one or more appenders that have been defined for the logger. Typical appenders write the logging info to the console, a file, the Windows event manager, Domino logging, ... More than one appender may be linked to a logger. Multiple loggers may share the same appender.
- layouts: the events logged by an application may contain plenty of information: time and date of the event, Java class name, method name and line number where the event occurred, text of the event, ... Layouts give you the possibility to format the output. In all following examples we will use the standard PatternLayout.

Example log4j configuration file

Let us first have a look to a standard configuration file. Remember that Sms4Domino will not use this way for configuring log4j.

```
log4j.rootLogger=INFO, console1
log4j.appender.console1=org.apache.log4j.ConsoleAppender
log4j.appender.console1.encoding=UTF-8
log4j.appender.console1.layout=org.apache.log4j.PatternLayout
log4j.appender.console1.layout.ConversionPattern=%d{HH:mm:ss,SSS} %m  %n
```

The first line configures the root logger. All log events of level INFO should be written to the appender called console1. Automatically all log events of level WARN, ERROR and FATAL will also be logged to the appender. Log events of level DEBUG and TRACE will not be routed to the appender.

All loggers form a hierarchy. The root logger is sitting at the top. As we enabled the root logger all other loggers will automatically be enabled for the INFO, WARN, ERROR and FATAL level.

The second line configures the appender called console1. The appender is based on a ConsoleAppender. This is a standard appender that writes all output to the console. In a Sms4Domino environment the console is either the Domino console and log.nsf (when

Sms4Domino is running as an add-in) or the Sms4Domino Swing console (when Sms4Domino is running as a standalone program).

The third line is required to propertly format no Ascii characters.

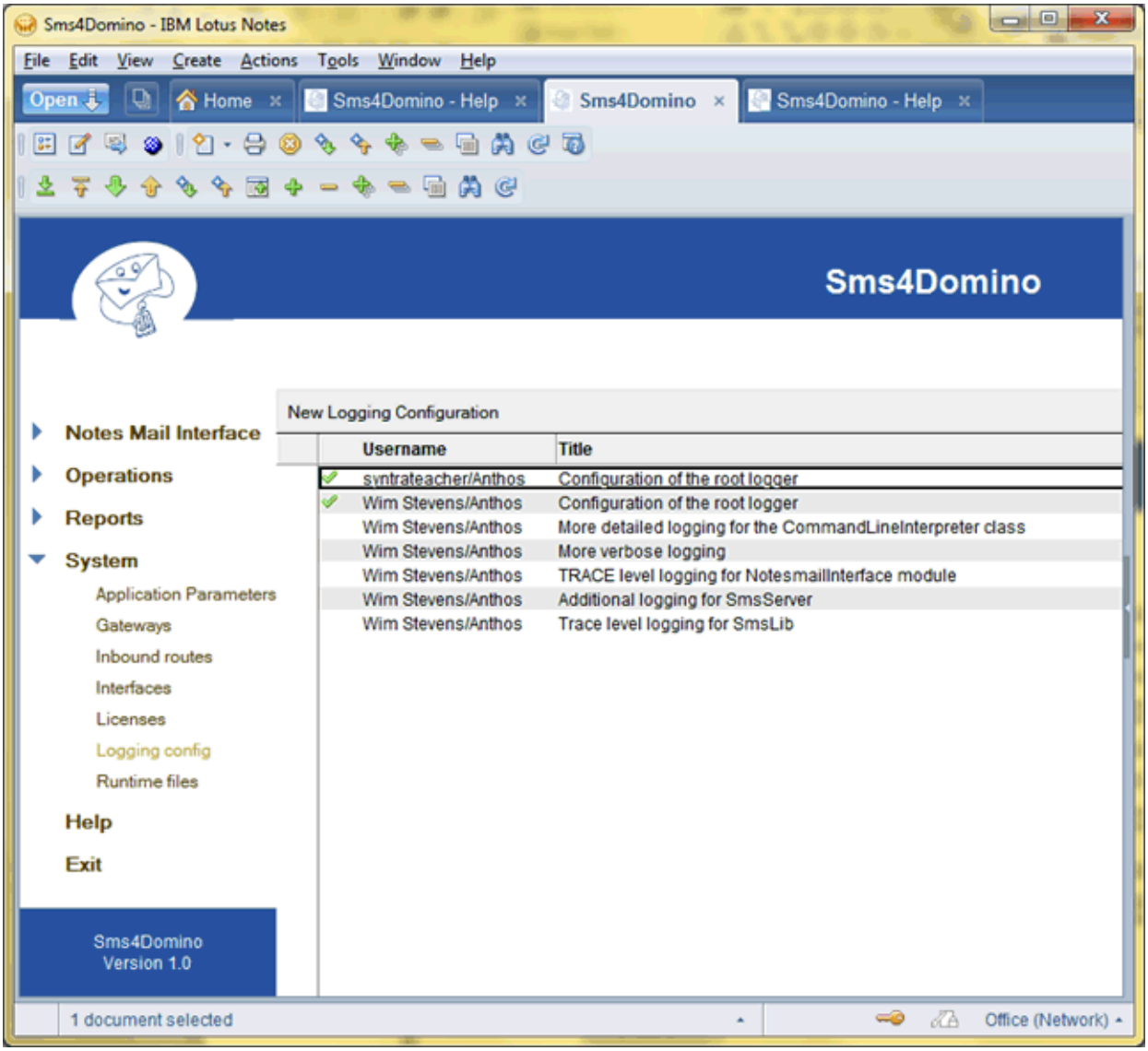
The fourth line specifies how the output should be formatted. We are using a standard PatternLayout. This layout requires additional information that is supplied on the fourth line.

The fifth line specifies what information should be logged for each event. In the example

- %d{HH:mm:ss,SSS}: time of the event in the format HH:mm:ss,SSS
- %m: the message supplied by the application
- %n: new line character

Procedure to create a Logging Configuration document

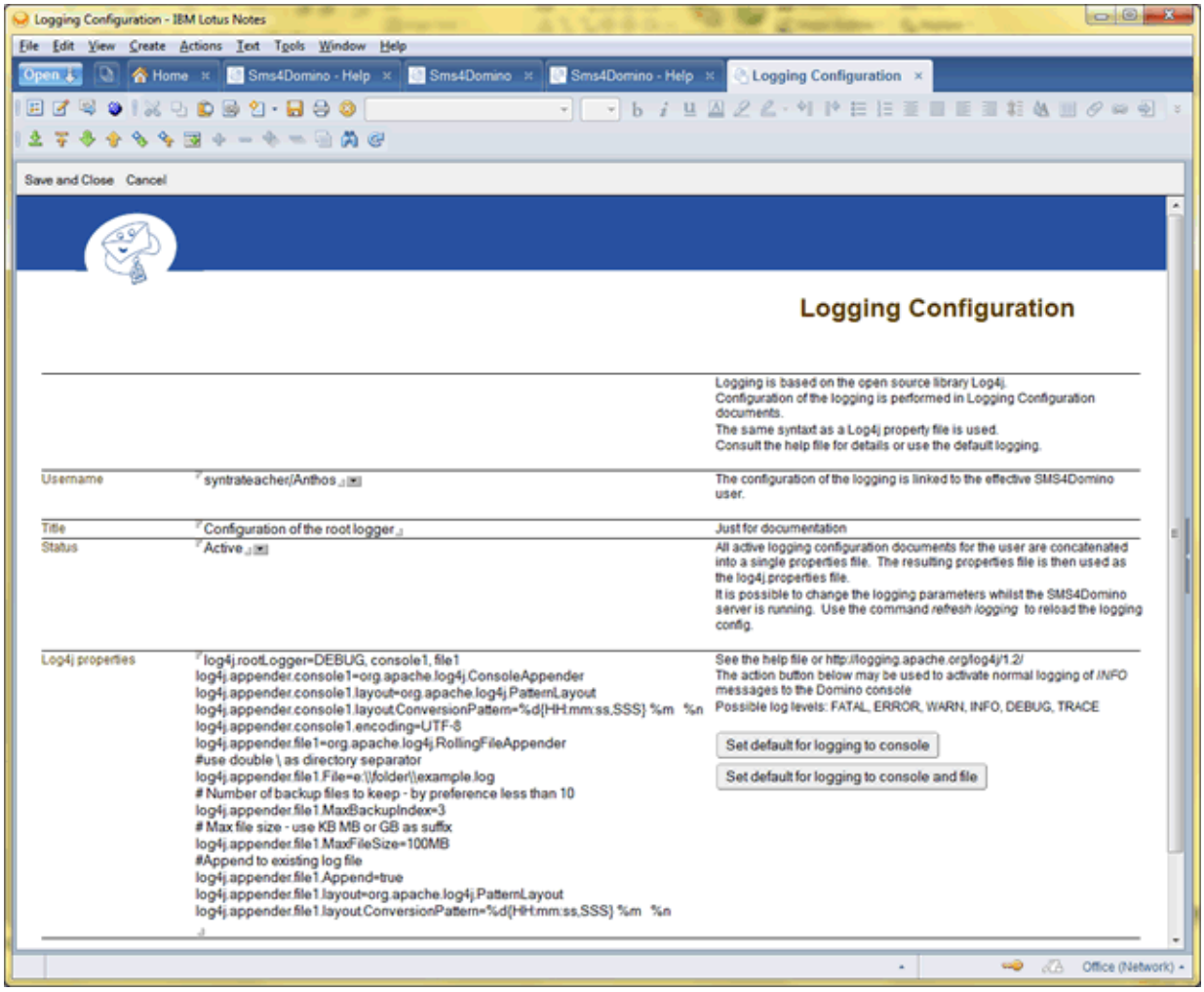
- Open the Sms4Domino configuration database.
- Select *System -> Logging config* in the navigator. The right part of the screen displays all defined logging configuration document.
  - Only Active logging configuration documents are used by Sms4Domino.
  - Sms4Domino will look for logging configuration documents that correspond to the user-id that is running Sms4Domino. Sms4Domino will build a log4j properties file that is the concatenation of all active logging configuration documents for the current Notes user.
  - The title is just for documentation



- Click on the action button *New Logging Configuration* or double click on an existing Logging Configuration document.

Logging Configuration settings

- Username: this name is compared to the username running Sms4Domino.
- Title: just for documentation
- Status: All active logging configuration documents for the user are concatenated into a single properties file. The resulting properties file is then used as the log4j.properties file. It is possible to change the logging parameters whilst the SMS4Domino server is running. Use the command *refresh logging* to reload the logging config.
- Log4j.properties: log4j settings as they would appear in a log4j properties file. Text starting with a # character is considered being a comment.
  The action button *Set default for standard logging* configures log4j for using a single console appender that outputs all INFO level events to the Sms4Domino console.
- Click *Save and Close* to save your changes.


Logging Configuration - IBM Lotus Notes
File Edit View Create Actions Text Tools Window Help
Open
Home
Sms4Domino - Help
Sms4Domino
Sms4Domino - Help
Logging Configuration
Save and Close Cancel
Logging Configuration
Logging is based on the open source library Log4j.
Configuration of the logging is performed in Logging Configuration documents.
The same syntax as a Log4j property file is used.
Consult the help file for details or use the default logging.
Username
syntrateacher/Anthos
The configuration of the logging is linked to the effective SMS4Domino user.
Title
Configuration of the root logger
Just for documentation
Status
Active
All active logging configuration documents for the user are concatenated into a single properties file. The resulting properties file is then used as the log4j.properties file.
It is possible to change the logging parameters whilst the SMS4Domino server is running. Use the command refresh logging to reload the logging config.
Log4j properties
log4j.rootLogger=DEBUG, console1, file1
log4j.appender.console1=org.apache.log4j.ConsoleAppender
log4j.appender.console1.layout=org.apache.log4j.PatternLayout
log4j.appender.console1.layout.ConversionPattern=%d{HH:mm:ss,SSS} %m %n
log4j.appender.console1.encoding=UTF-8
log4j.appender.file1=org.apache.log4j.RollingFileAppender
#use double \ as directory separator
log4j.appender.file1.File=e:\\folder\\example.log
# Number of backup files to keep - by preference less than 10
log4j.appender.file1.MaxBackupIndex=3
# Max file size - use KB MB or GB as suffix
log4j.appender.file1.MaxFileSize=100MB
#Append to existing log file
log4j.appender.file1.Append=true
log4j.appender.file1.layout=org.apache.log4j.PatternLayout
log4j.appender.file1.layout.ConversionPattern=%d{HH:mm:ss,SSS} %m %n
See the help file or http://logging.apache.org/log4j/1.2/
The action button below may be used to activate normal logging of INFO messages to the Domino console
Possible log levels: FATAL, ERROR, WARN, INFO, DEBUG, TRACE
Set default for logging to console
Set default for logging to console and file
Office (Network)

Conversion Pattern

The conversion pattern specifies what information must be logged for an event. Example

```
log4j.appender.console1.layout.ConversionPattern=%d{HH:mm:ss,SSS} %m   %n
```

The conversion pattern is written to the right of the = sign. It is composed of literal text and conversion specifiers. Conversion specifiers start with the % character followed by optional format modifiers and a conversion character. The conversion character specifies the type of data, e.g. category, priority, date, thread name. The format modifiers control such things as field width, padding, left and right justification. The following is a simple example copied from the log4j Javadoc (http://logging.apache.org/log4j/1.2/apidocs/org/apache/log4j/PatternLayout.html)

Let the conversion pattern be "%-5p [%t]: %m%n" and assume that the log4j environment was set to use a PatternLayout. When logging the messages "Message 1" and "Message 2" would yield the output

```
DEBUG [main]: Message 1
WARN  [main]: Message 2
```

Some conversion characters

- c: name of the logger
- d: date of the logging event. It may be followed by a date format written between { }. E. g. %d{HH:mm:ss,SSS} or %d{dd MMM yyyy HH:mm:ss,SSS}. If no date format specifier is given then ISO8601 format is assumed.
- m: the application supplied message associated with the logging event.
- n: the platform dependent line separator character or characters
- %: the sequence %% outputs a single percent sign.

Console Appender settings

A console appender should be used to route all logging information to the Sms4Domino console. When Sms4Domino runs as a server add-in the console is integrated with the Domino console and the Domino log.nsf.

A typical console appender is configured with following four configuration entries (assuming the appender is called console1 as defined by *log4j.rootLogger=INFO, console1*)

```
log4j.appender.console1=org.apache.log4j.ConsoleAppender
log4j.appender.console1.layout=org.apache.log4j.PatternLayout
log4j.appender.console1.encoding=UTF-8
log4j.appender.console1.layout.ConversionPattern=%d{HH:mm:ss,SSS} %m   %n
```

File Appender settings

File appenders are used to route all logging information to one or more files.

- FileAppender appends log events into a file. The file is specified by the File option. If the file already exists, it is either appended or truncated depending on the value of the Append parameter.
- RollingFileAppender acts as a FileAppender but will create a new file when the log file reaches a certain size specified by the MaxFileSize parameter. When creating a new file the current log file is renamed by appending a .1 to the filename. Should this .1 file already exist it is renamed by changing the .1 to .2. The maximum number of files to keep is specified by the MaxBackupIndex parameter.
- DailyRollingFileAppender acts as a FileAppender but will create a new file at a user chosen interval. The file names will contain the date information.

A typical configuration file for using a FileAppender (assuming the appender is called file1 as defined by *log4j.rootLogger=INFO, console1, file1*)

```
log4j.appender.file1=org.apache.log4j.FileAppender
#use \\ or / as directory separator when specifying the file name
log4j.appender.file1.File=e:\\folder\\example.log
# Append parameter: if true the logger will append to the file should it already exist
log4j.appender.file1.Append=true
```

A typical configuration file for using a RollingFileAppender (assuming the appender is called file1 as defined by *log4j.rootLogger=INFO, console1, file1*)

```
log4j.appender.file1=org.apache.log4j.RollingFileAppender
#use \\ or / as directory separator when specifying the file name
log4j.appender.file1.File=e:\\folder\\example.log
# Append parameter: if true the logger will append to the file should it already exist
log4j.appender.file1.Append=true
# The MaxBackupIndex option determines the number of previously rolled files to preserve.
#  If set to zero, then no roll over occurs and the log file is simply truncated when it reaches
MaxFileSize.
log4j.appender.file1.MaxBackupIndex=5
# The MaxFileSize option takes a String value representing a long integer in the range 0 -
263. You can specify the value with the suffixes "KB", "MB" or "GB" so that the integer is
interpreted as being
# expressed respectively in kilobytes, megabytes or gigabytes.
# Rollover occurs when the log file reaches MaxFile-Size. One log event will always be
contained within one file
log4j.appender.file1.MaxFileSize=100MB
```

A typical configuration file for using a DailyRollingFileAppender (assuming the appender is called file1 as defined by *log4j.rootLogger=INFO, console1, file1*)

```
log4j.appender.file1=org.apache.log4j.RollingFileAppender
#use \\ or / as directory separator when specifying the file name
log4j.appender.file1.File=e:\\folder\\example.log
# Append parameter: if true the logger will append to the file should it already exist
log4j.appender.file1.Append=true
# The DatePattern specifies when the rollover should occur. The parameter should follow the
conventions of the java.text.SimpleDateFormat class
#   yyyy for yearly rollover
#   yyyy-MM for monthly rollover
#   yyyy-MM-dd for daily rollover
#   yyyy-MM-dd-a for daily rollover at midnight and midday
#   yyyy-MM-dd-HH for hourly rollover
#  The pattern is used to specify when the rollover should occur and what suffix should be
```

added to the filename. The pattern may include single quoted text. This may be usefull for specifying the file suffix
log4j.appender.file1.DatePattern='.'yyyy-MM-dd-HH

Using multiple appenders

When running Sms4Domino as a server addin it may be sufficient to use one ConsoleAppender. All historical logging will be stored in log.nsf automatically.
However, when Sms4Domino runs as a standalone program, you may want to use a ConsoleAppender and a FileAppender. This is accomplished by specifying more than one appender for the rootLogger

```
log4j.rootLogger=INFO, console1, file1
```

The level of logging (INFO in the above example) is always the same for all specified appenders.

Should it be required to have a different level of logging for the console and file appenders you could specify the most verbose level of logging for the rootLogger and then filter the logging at the appender level.
In following example we would like DEBUG level logging to a file and INFO level logging to the console. This is achieved by specifying the Threshold parameter for the least verbose appender

```
log4j.rootLogger=DEBUG, console1, file1
log4j.appender.console1.Threshold=INFO
```

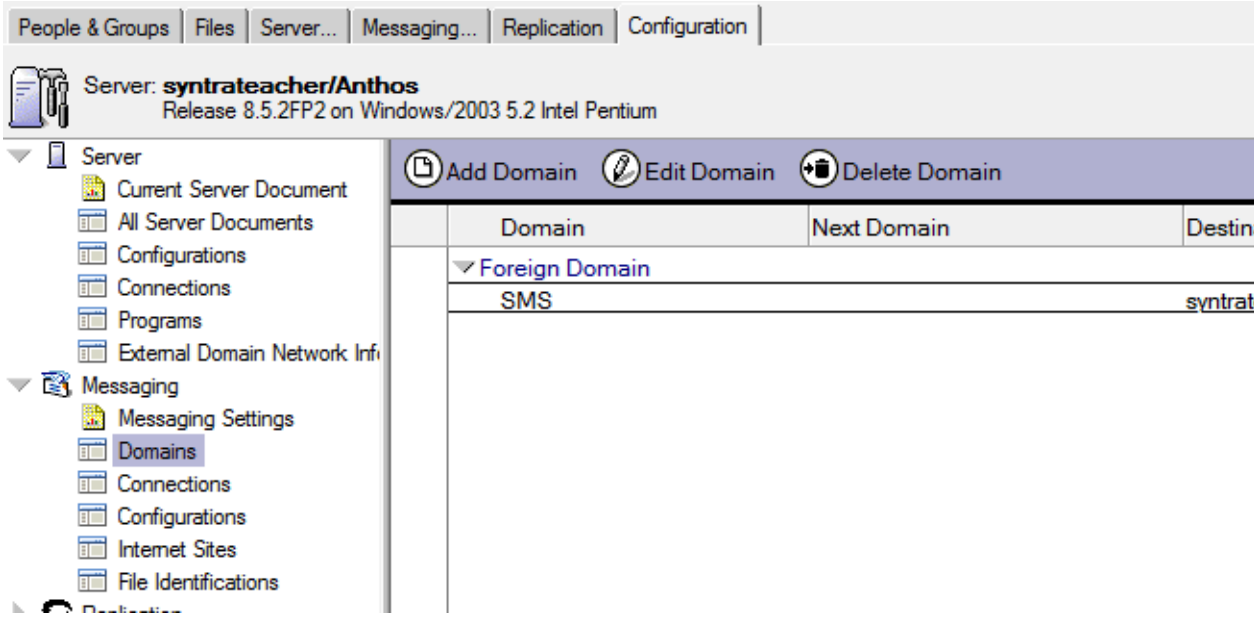
Configuration of Domino mail topology

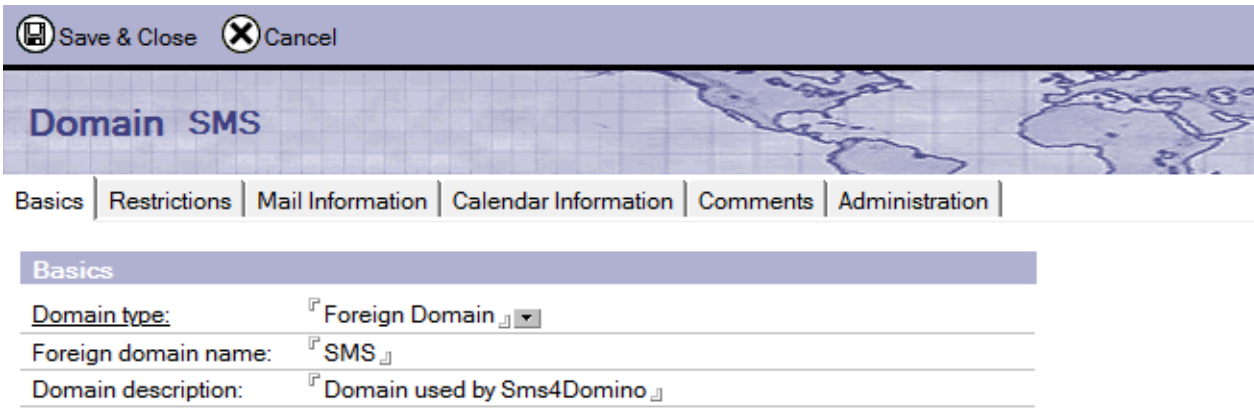
End users will mostly use the Notes mail interface to send Sms messages. They compose a mail message using the Notes client or iNotes and address it to

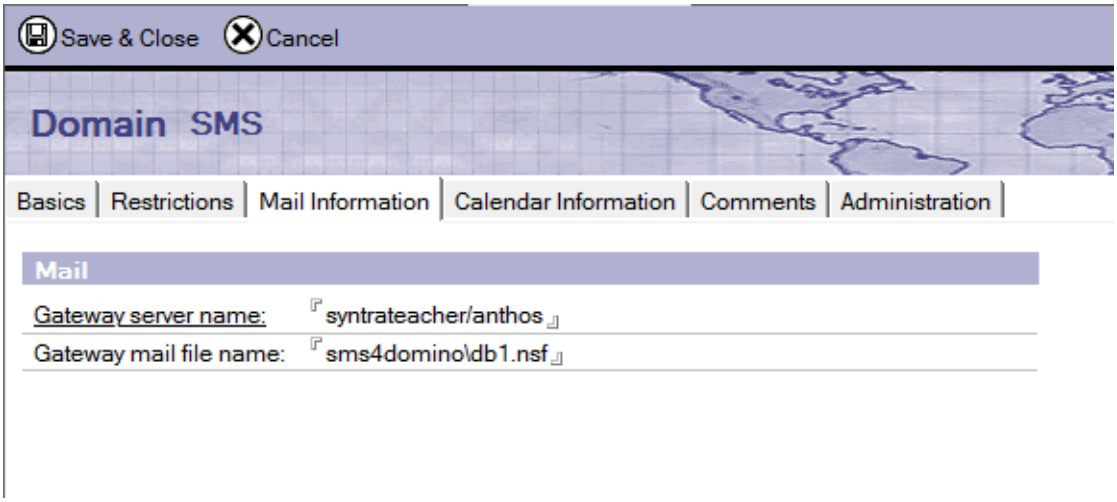
John@0474778899@Sms

The @ character is recognized by the Domino router as a Domino domain separator. Domino must know how to route the mail to the foreign domain called Sms. The Sms4Domino configuration database must be specified as the gateway server and file.

In case your Domino environment consists of multiple Domino server you may need to configure Domino connection documents to specify the path from each server to the Sms4Domino server.







Following text has been copied from the Lotus Administrator Help File

Principles of operations

Sms4Domino may run as a Domino server addin or as a standalone program.

End users compose Sms messages by sending an e-mail to e.g; John@0474876212@sms. This can be done from the Notes clients, iNotes, Lotus Traveler, ... The Domino router knows how to deliver the message to the Sms4Domino configuration database. Sms4Domino picks up the mail, converts it into a SMS message and transmits it via one of the gateways.

Of course it is also possible to create the mail message from non-Notes environments. For example a server monitoring program may detect a server failure and send a SMTP mail message to one of the Domino servers. In this case the mail must be addressed to John%0474876212%sms@company.com. The SMTP listener task accepts the message. The part before the @company.com is interpreted as a Lotus Notes mail address where % is used as a Domino domain separator.

End users may ask for a delivery report. When Sms4Domino receives the delivery report from the GSM network, it is converted into a regular mail and routed back to the end user.

In the following documents you will learn how to start Sms4Domino and how to monitor the operations.

Run Sms4Domino as a Domino server addin

Java programs may be executed under control of the RunJava task. The Java Virtual Machine that is shipped with Lotus Domino (typically stored in a subdirectory of IBM\Lotus\Domino\jvm) must be used, as Sms4Domino depends on some cryptographic API's that are shipped by IBM and are not part of Oracle's jvm.

The run-time files must have been correctly detached to the local file system. You should strictly follow the installation instructions. Otherwise you will see security exceptions in the log file.

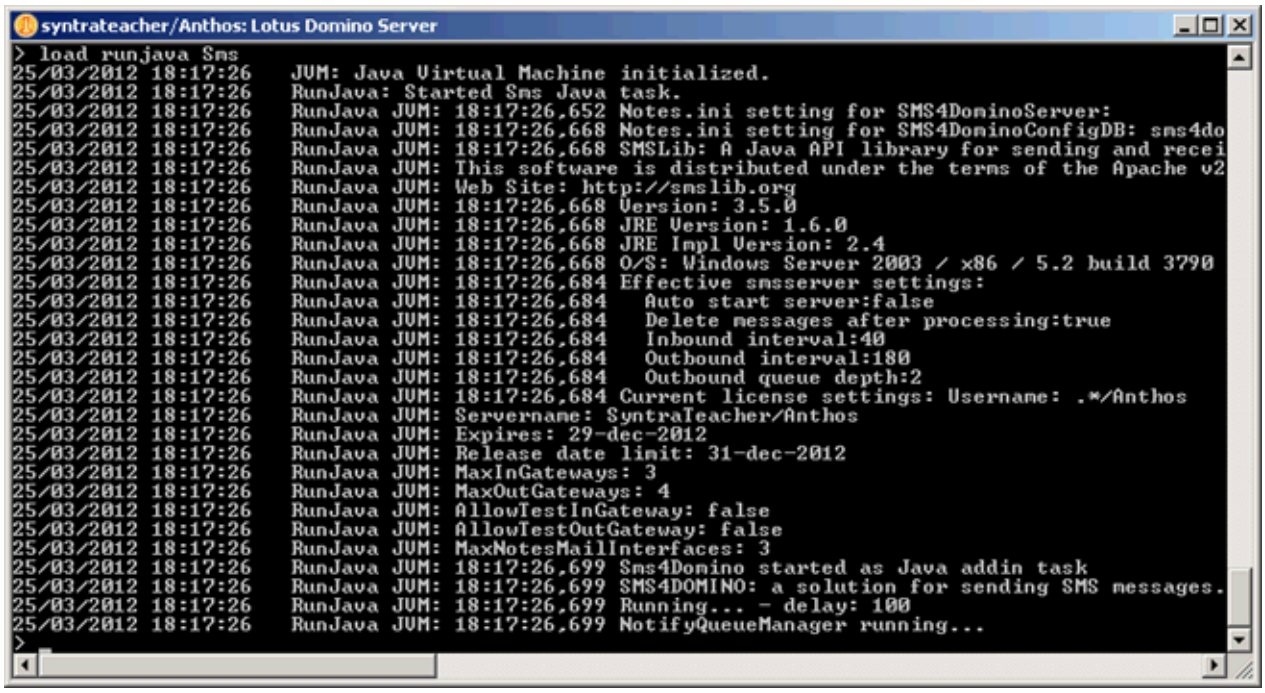
Sms4Domino is started by entering the Domino server command

load runjava Sms4DominoAddin

As a shortcut the following command produces the same result

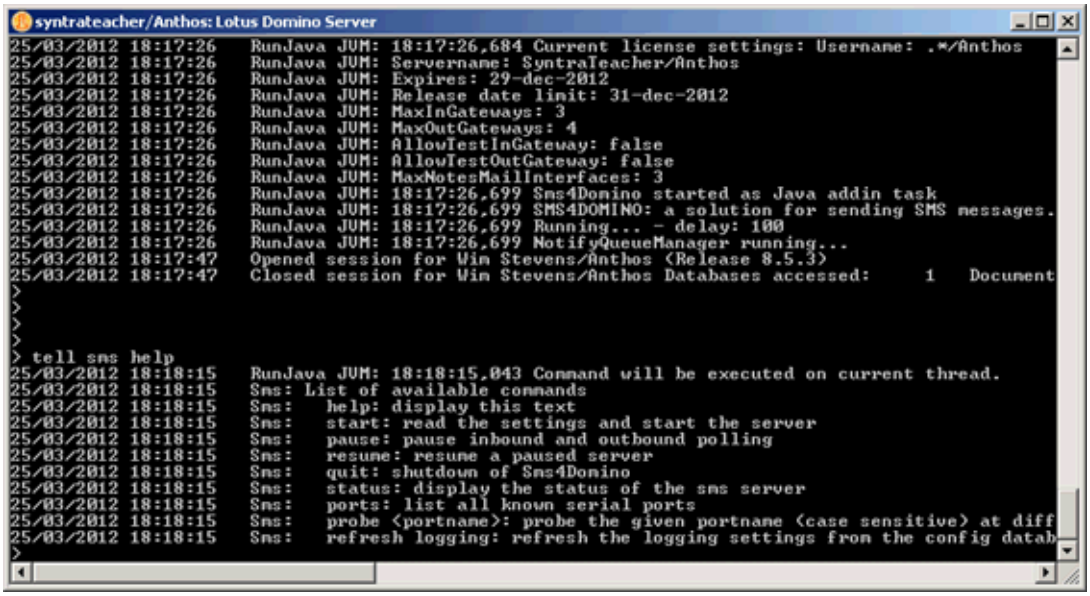
load runjava Sms

The name Sms4DominoAddin or Sms is case sensitive.



Sms4Domino commands are entered by typing

tell Sms <command>



Sms4Domino may be stopped by entering the quit command. However, if other tasks are running under control of RunJava, not all Java objects will be removed from memory. It is better to stop Sms4Domino by issuing the *tell runjava quit* command.

Sms4Domino may be launched when Domino starts by modifying the notes.ini file of the server. Look for the entry ServerTasks and add *RunJava Sms* at the end

ServerTasks=LDAP, router, RunJava Sms

Run Sms4Domino as a standalone program

Sms4Domino may run as a standalone program. This Java program makes local Domino calls. The computer must satisfy following conditions

- Lotus Notes 8.x client must have been installed on the computer.
- Notes.ini of the Notes client must contain a valid entry *keyfilename=<filepath of the user.id file>* . It is recommended to test the Notes setup by launching the Notes client and opening the Sms4Domino configuration file on the server.
- The run-time files must have been correctly detached to the local file system. You should strictly follow the installation instructions. Otherwise you will see security exceptions in the log file.

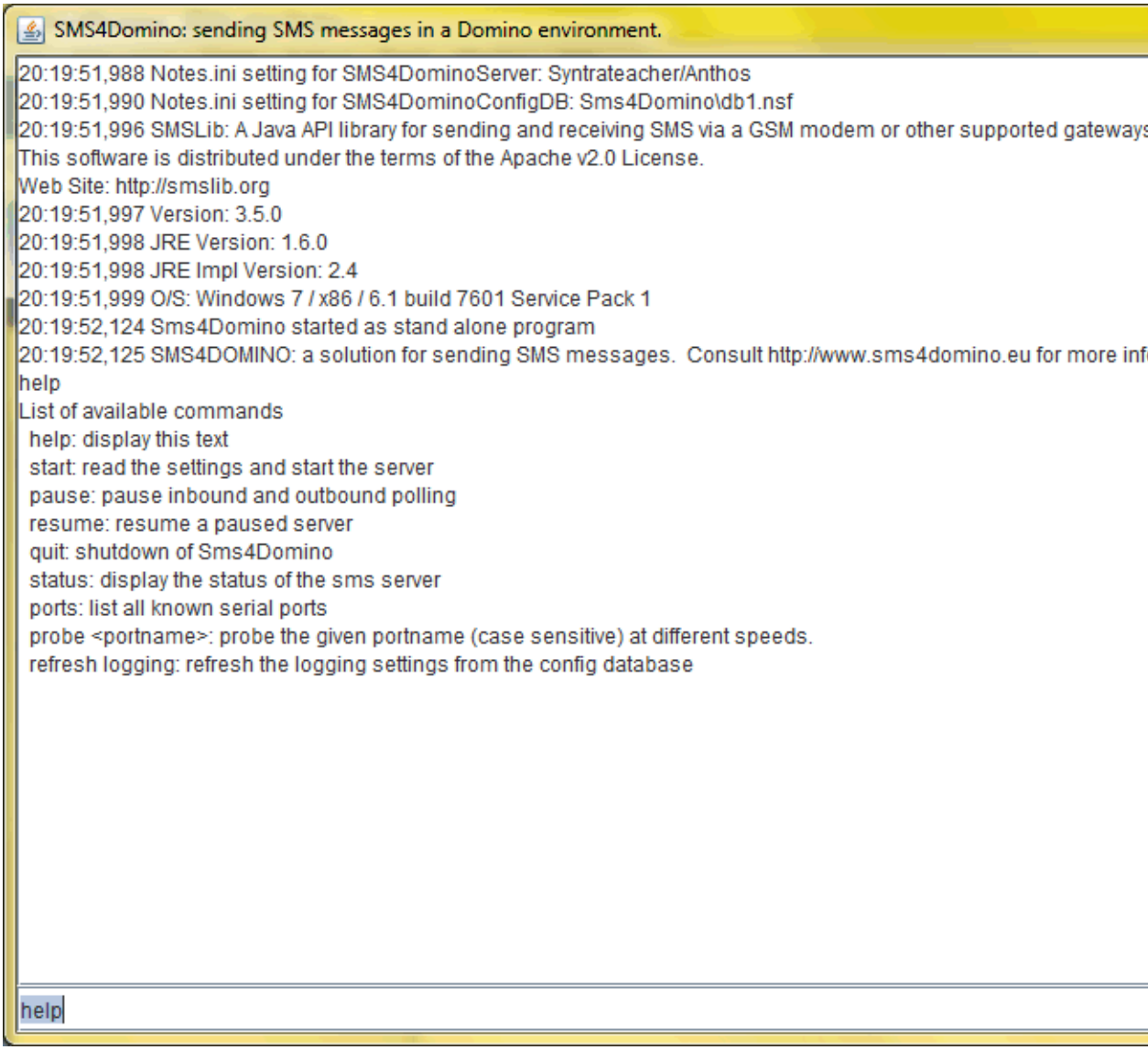
Sms4Domino may be launched by executing following batch file. The name Sms4DominoStandalone is case sensitive. We assume that Lotus Notes has been installed in c:\program files (x86)\IBM\Lotus\Notes

```
c:
cd \program files (x86)\IBM\Lotus\Notes\jvm\bin
java Sms4DominoStandalone
```

In case the user.id file is protected by a password you will be prompted to enter the password. It is also possible to specify the password on the command line as a parameter

```
c:
cd \program files (x86)\IBM\Lotus\Notes\jvm\bin
java Sms4DominoStandalone password
```

The Sms4Domino console will be launched.



The bottom area is used to enter commands. Use the arrow-up and arrow-down keys to scroll through the command history.

The Windows may be resized. Sms4Domino stores the window size in the notes.ini.

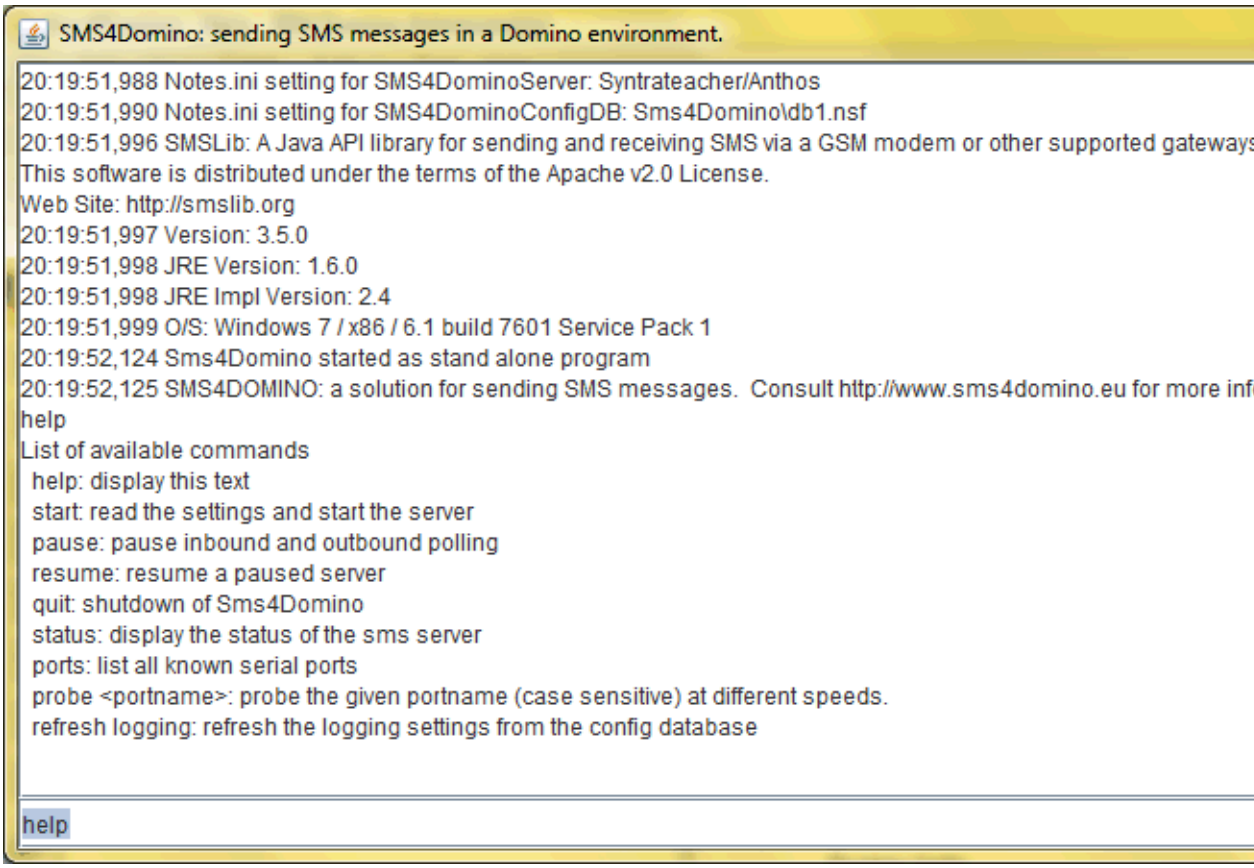
Sms4Domino is terminated by entering the quit command. Should this fail - and this could happen when some low lever I/O cannot be interrupted - the program is stopped by clicking the x in the top right corner of the console window.

Sms4Domino commands

When Sms4Domino has been launched the program is ready to accept commands entered via the console. Sms4Domino is not yet ready to send SMS messages unless the autostart parameter was specified in the application profile.

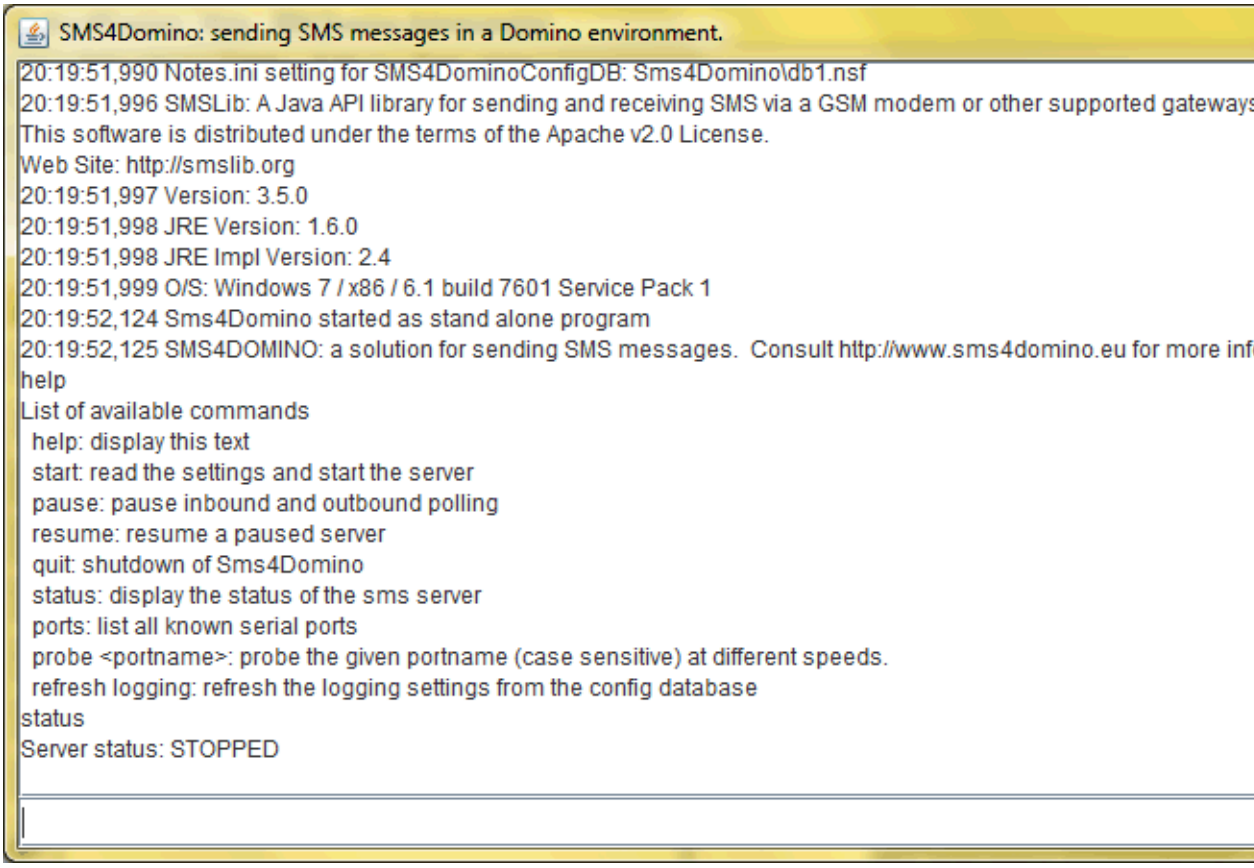
Help command

Syntax: help
Purpose: displays the list of known commands



Status command

Syntax: status
Purpose: displays the status of Sms4Domino. This status is also displayed in the gateway document (see the help document about gateway documents)

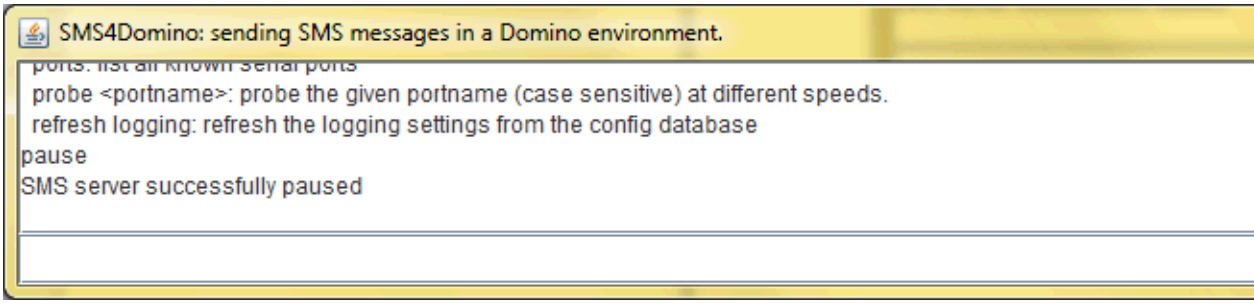


Start command

Syntax: start
Purpose: starts a stopped Sms4Domino server. Once started, the server will be processing requests for sending Sms messages
Remark: it is recommended to configure Sms4Domino in auto-start mode. This avoids having to enter the start command.

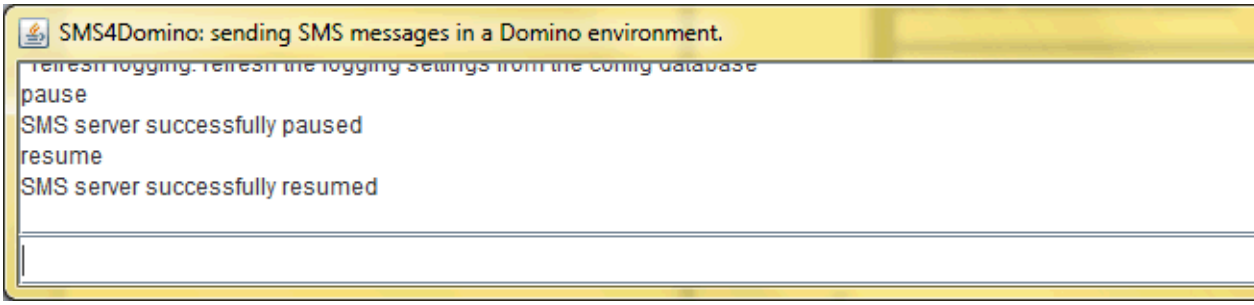
Pause command

Syntax: pause
Purpose: a started server may be paused. It will halt the polling of the interfaces.



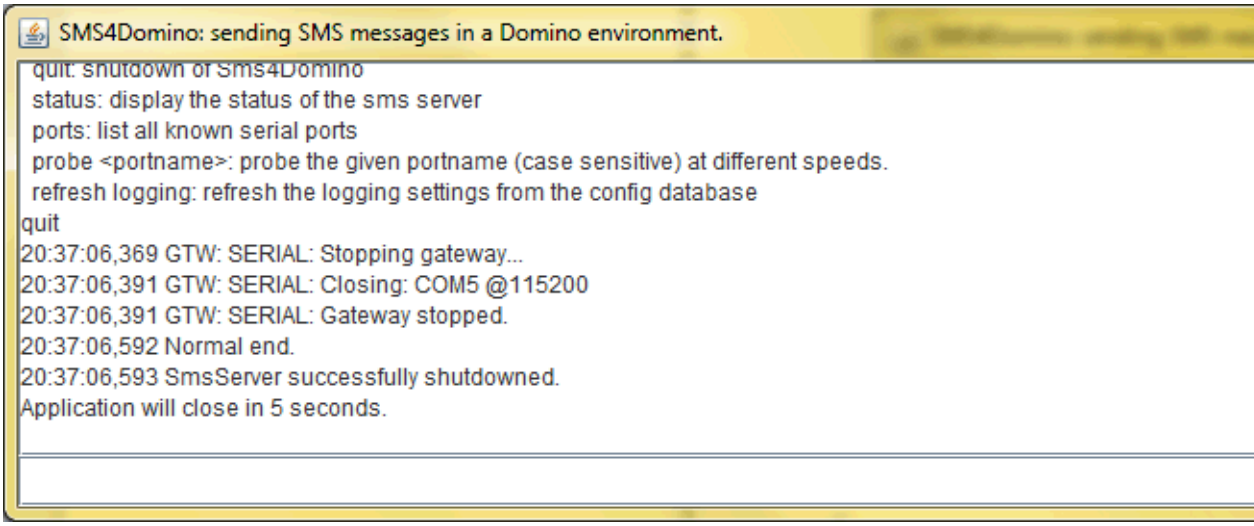
Resume command

Syntax: resume
Purpose: a paused server may be resumed. It will continue to process all Sms requests



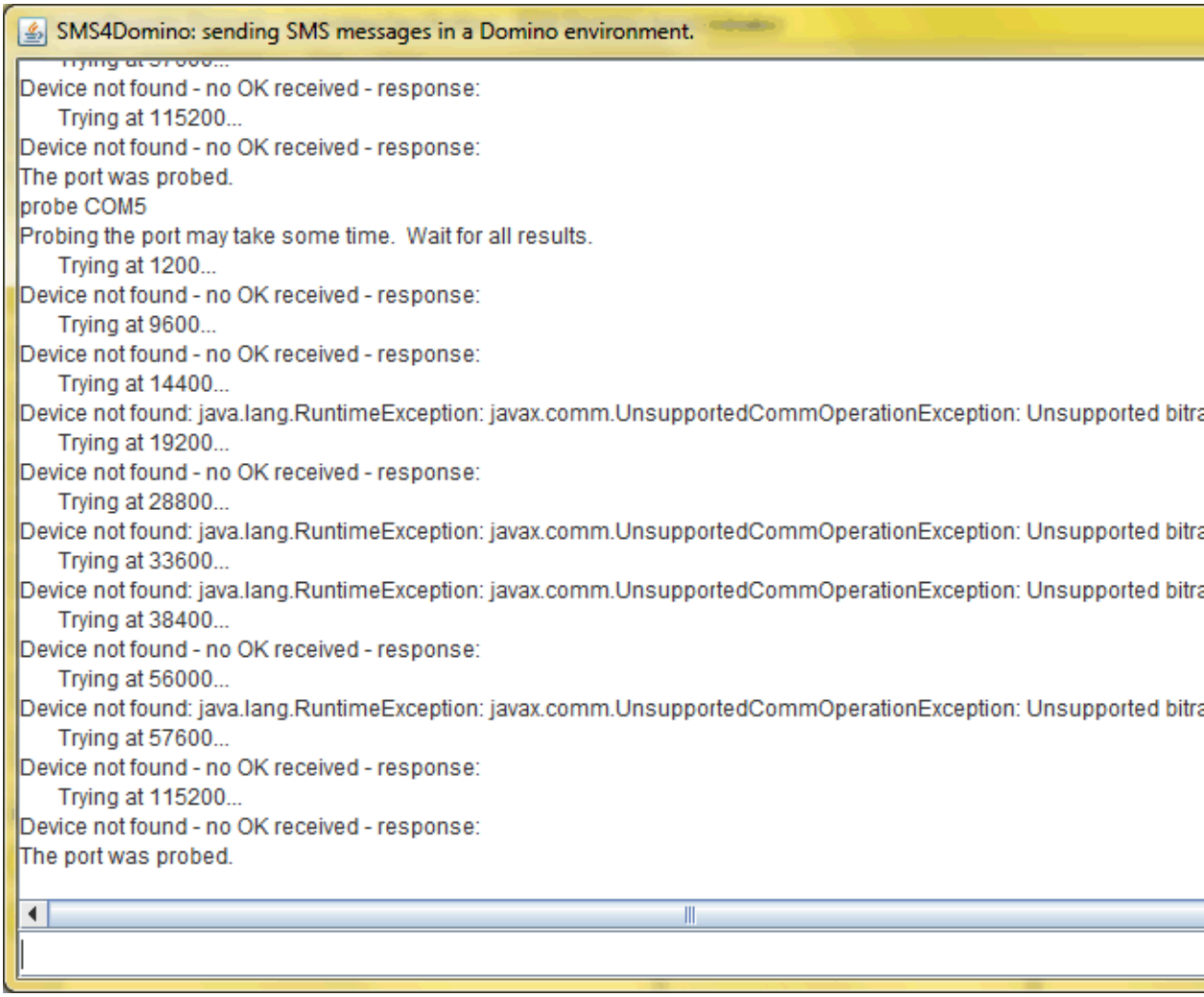
Quit command

Syntax: quit
Purpose: terminates Sms4Domino.
It is recommended to issue the quit command before quitting the Domino server



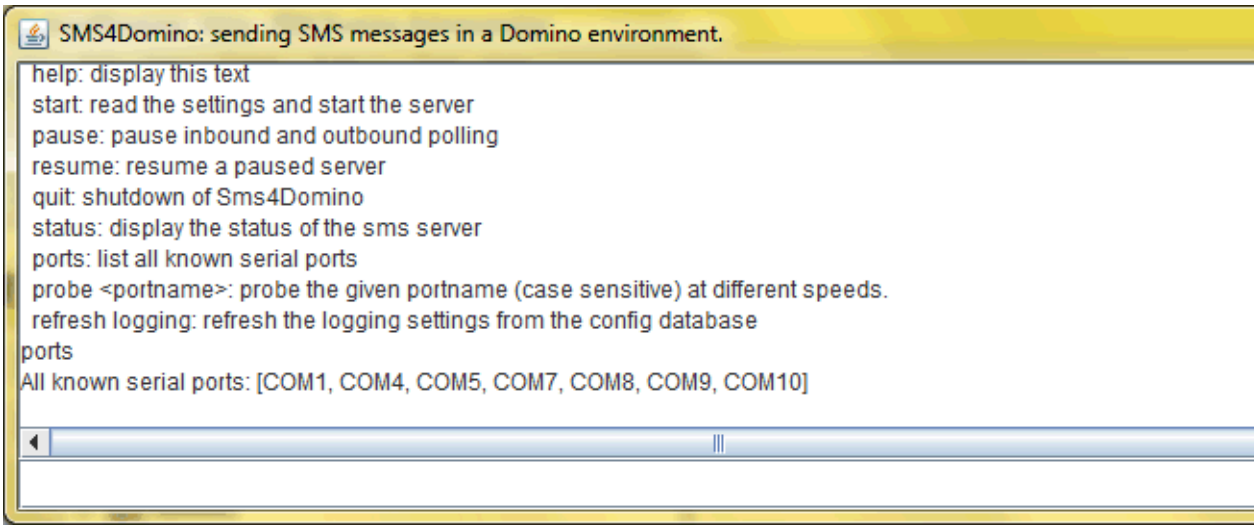
Probe command

Syntax: probe COM<i> (e.g. probe COM5)
Purpose: test the communication with a modem via the specified serial port at different speeds.
The portname is case sensitive and should not contain the : (colon) character.
Some modems do not react correctly when being probed at different speeds. It is better to test the communication with the modem via an external program.



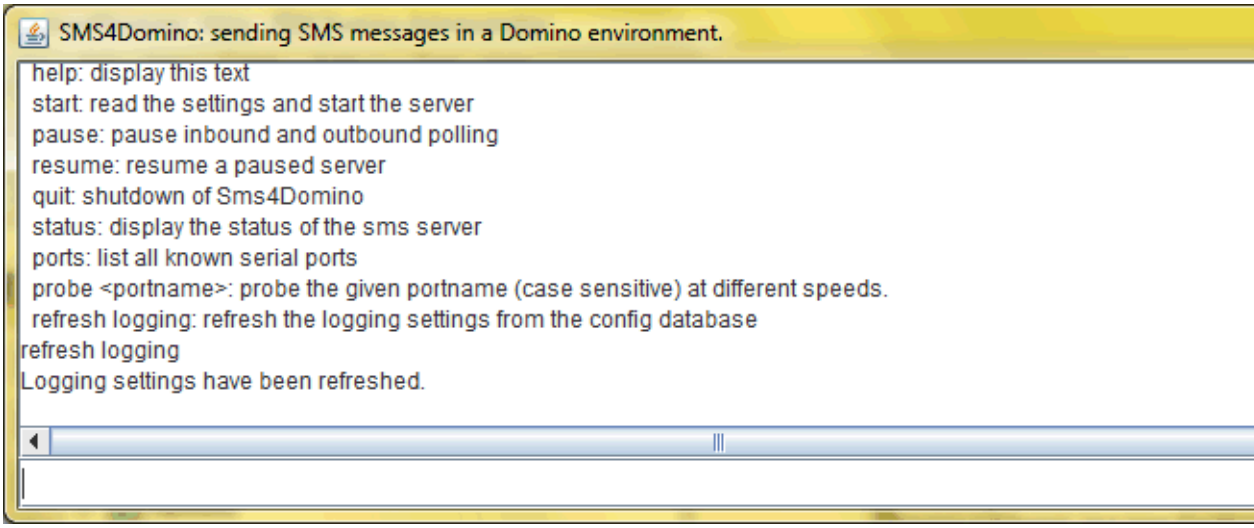
Ports command

Syntax: ports
Purpose: displays the list of all known serial ports. If your port is not listed then it cannot be used by Sms4Domino. Modems connected via USB that are mapped to a virtual COM port may remain invisible for Sms4Domino.



Refresh logging command

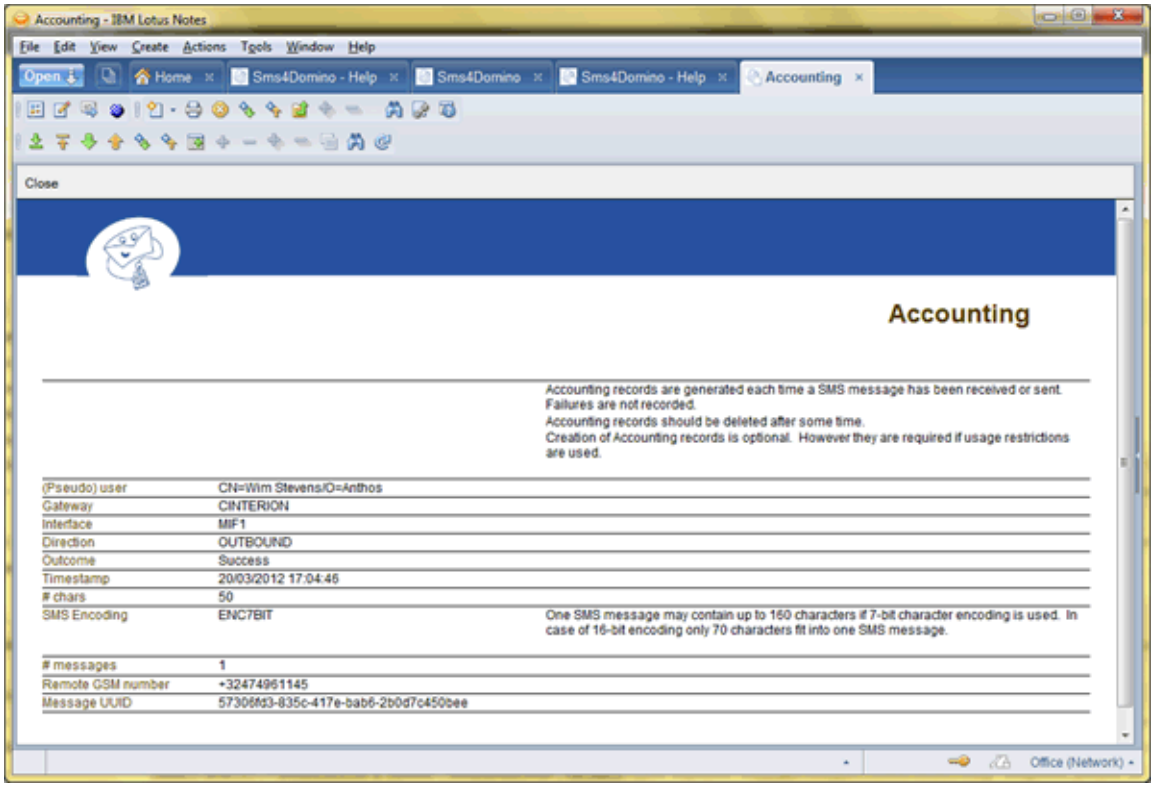
Syntax: refresh logging
Purpose: when a Sms4Domino setting is changed (gateway, interface, application profile, license) it is necessary to quit and launch Sms4Domino. The exception is the configuration of the logging. After making a change this command may be used.



Accounting records

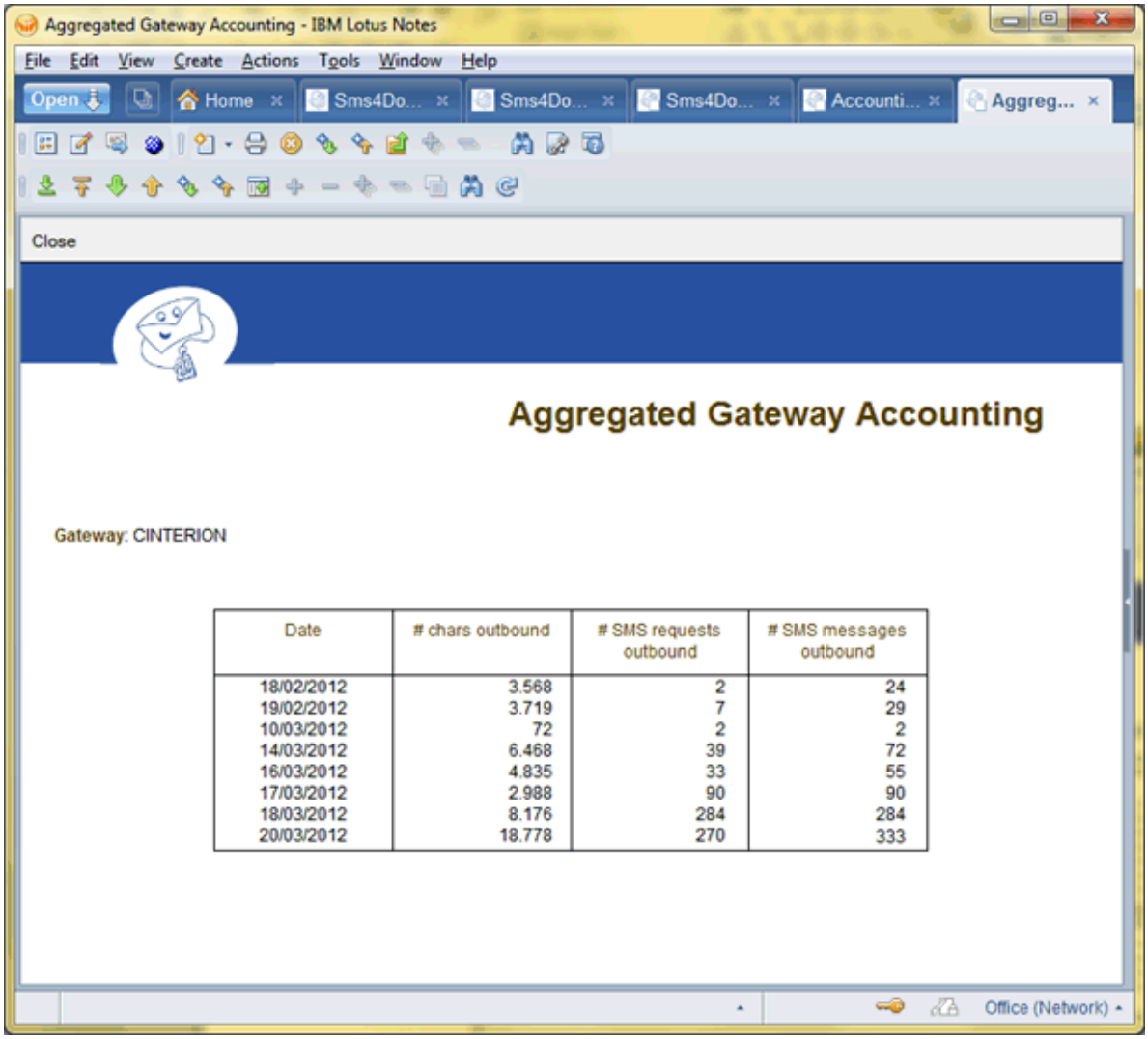
Each time a SMS message was successfully sent an accounting document is written. The document contains information about the end user, the date/time of the request, the number of characters, the estimated number of required SMS messages, the gateway and the interface.

Creation of accounting records for inbound Sms messages is planned for a future release.



The creation of accounting records may be enabled/disabled in the *Application Parameters* document.

In parallel with the creation of detailed accounting records the system keeps also aggregated accounting records: one Notes document per gateway, interface and end-user. These documents contain the total volume per day for the corresponsing user, gateway or interface.



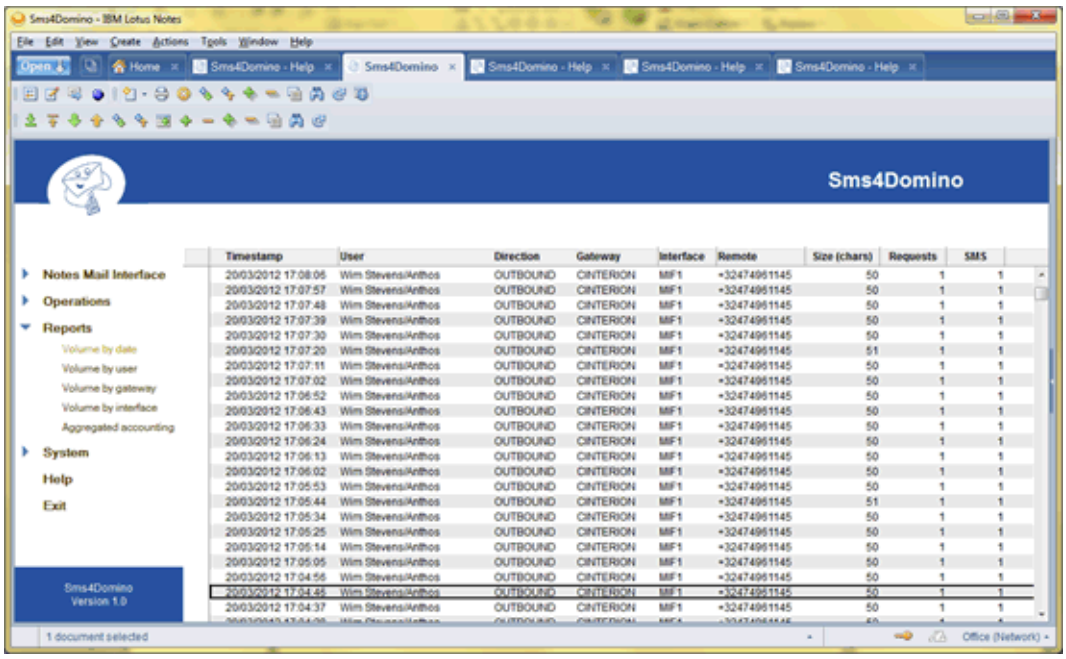
Aggregated accounting documents are required in case restrictions on the volume must be imposed (planned for a future release).

Tip: the administrator should delete the detailed accounting documents when they consume too much disc space.

Volume by date report

This view shows all available accounting records sorted by date.

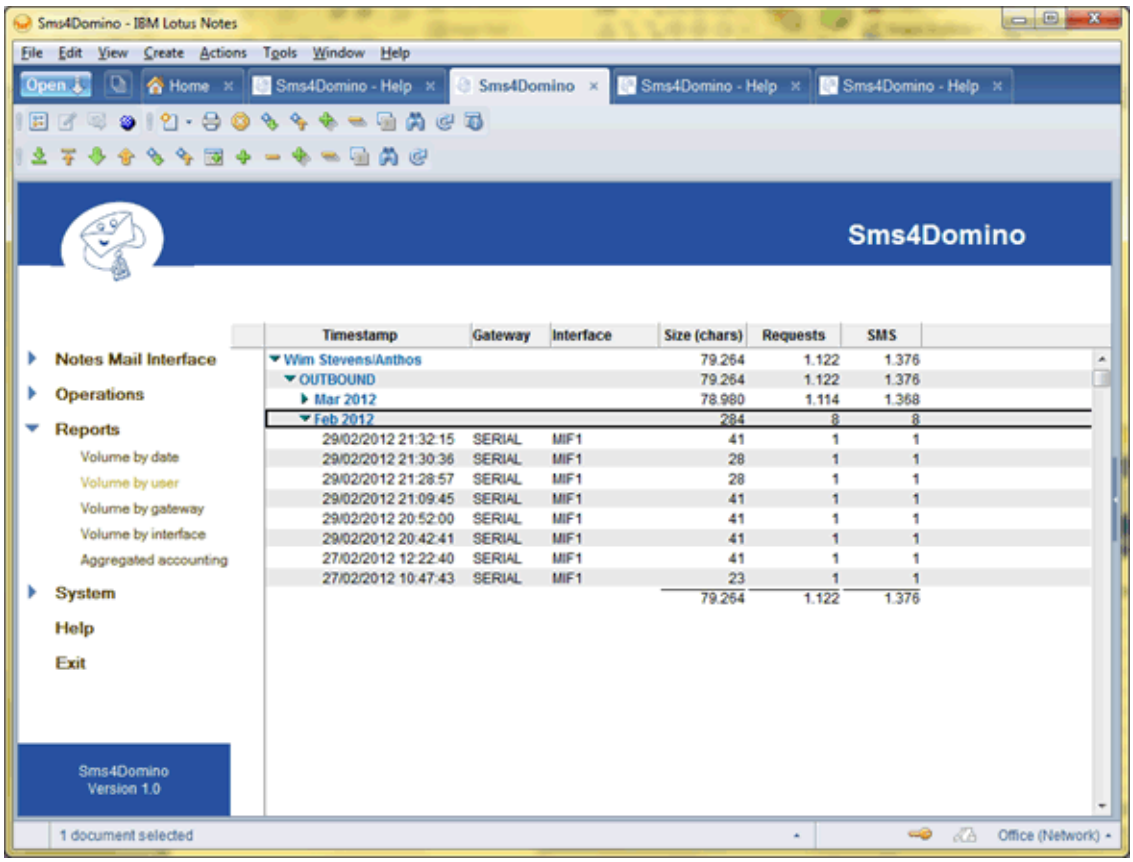
Every interface may have its own definition of user. For the mail interface the user is the name in the from field of the mail.



Volume by user report

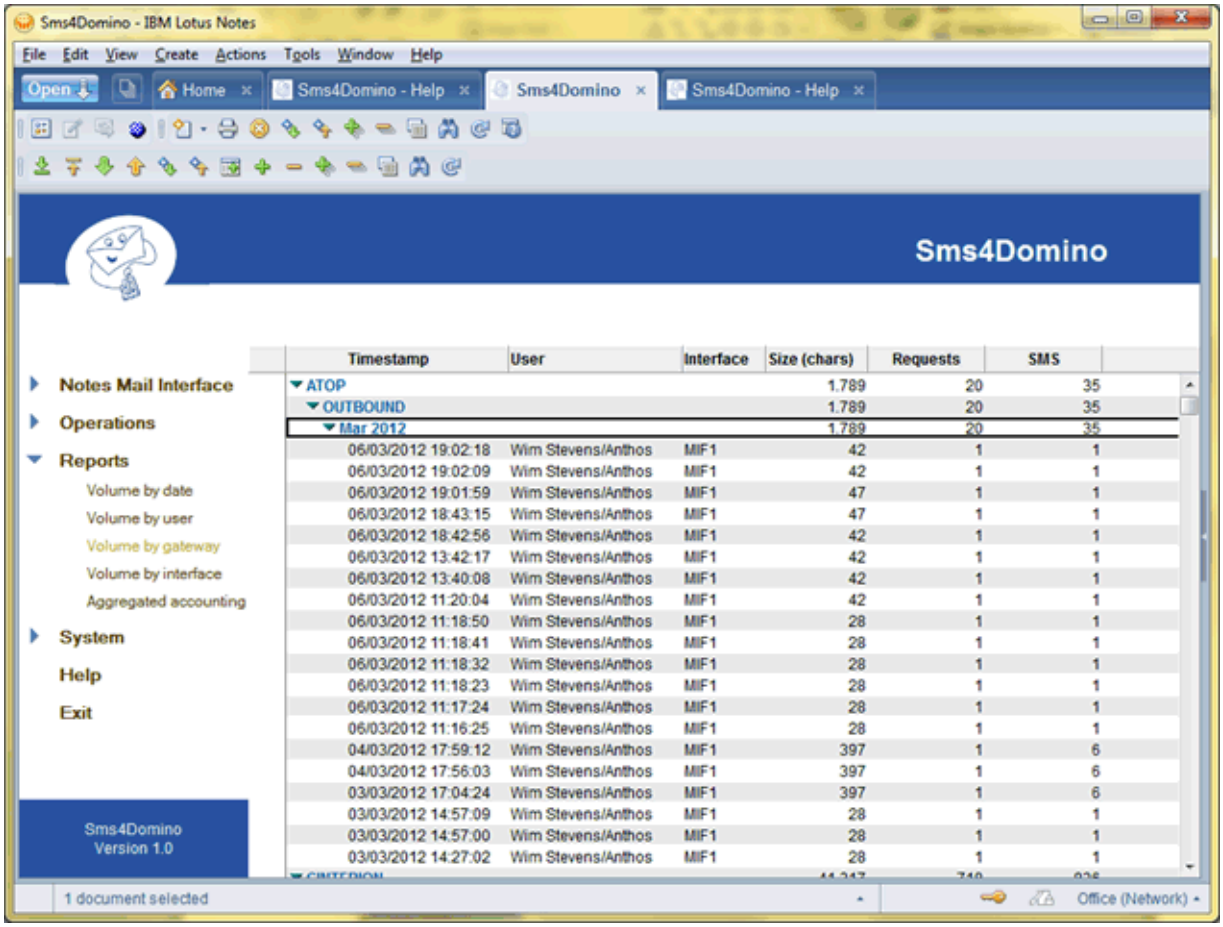
This view shows all available accounting records grouped by user and month.

Every interface may have its own definition of user. For the mail interface the user is the name in the from field of the mail.



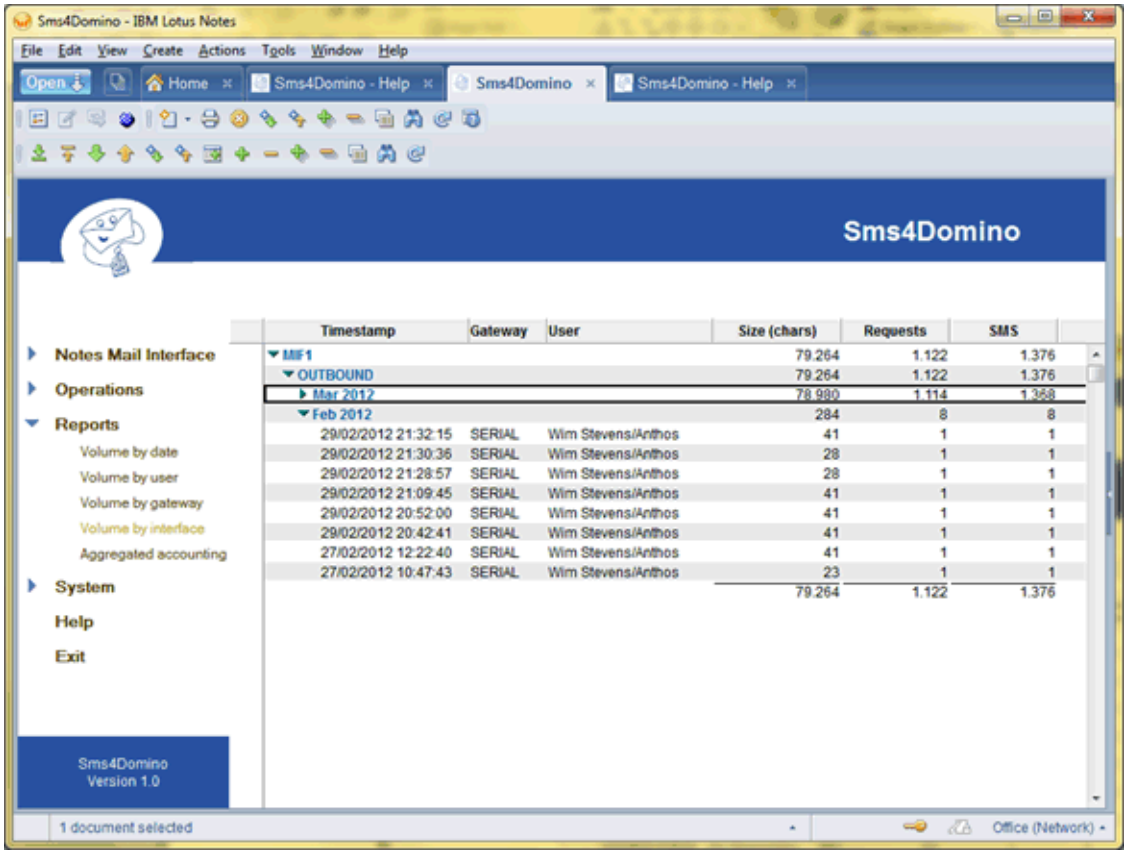
Volume by gateway report

This view shows all available accounting records grouped by gateway and month.



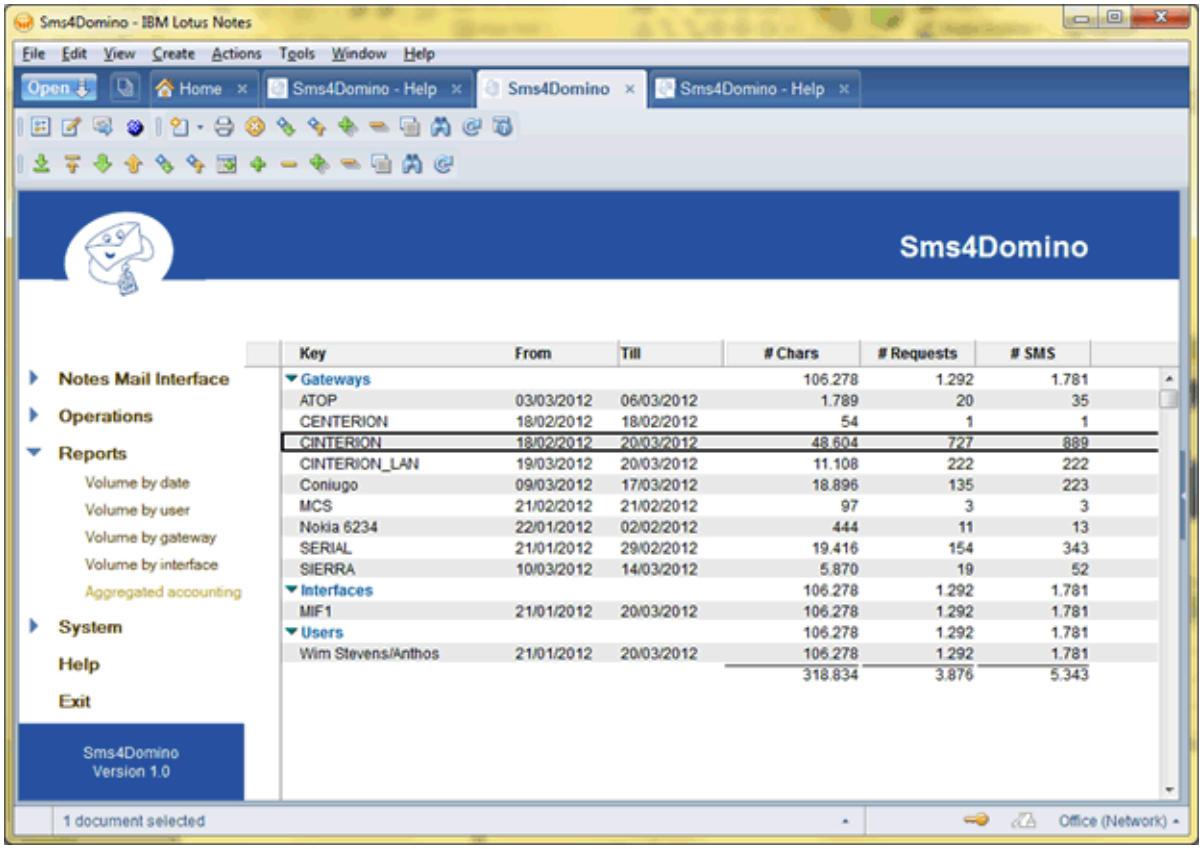
Volume by interface report

This view shows all available accounting records grouped by interface and month.



Aggregated accounting report

This view shows all available aggregated. There may be one document for per gateway, per interface and per user



Key	From	Till	# Chars	# Requests	# SMS
Gateways			106.278	1.292	1.781
ATOP	03/03/2012	06/03/2012	1.789	20	35
CENTERION	18/02/2012	18/02/2012	54	1	1
CINTERION	18/02/2012	20/03/2012	48.604	727	889
CINTERION_LAN	19/03/2012	20/03/2012	11.108	222	222
Coniugo	09/03/2012	17/03/2012	18.896	135	223
MCS	21/02/2012	21/02/2012	97	3	3
Nokia 6234	22/01/2012	02/02/2012	444	11	13
SERIAL	21/01/2012	29/02/2012	19.416	154	343
SIERRA	10/03/2012	14/03/2012	5.870	19	52
Interfaces			106.278	1.292	1.781
MIF1	21/01/2012	20/03/2012	106.278	1.292	1.781
Users			106.278	1.292	1.781
Wim Stevens/Anthos	21/01/2012	20/03/2012	106.278	1.292	1.781
			318.834	3.876	5.343

Purpose

The Notes Mail Interface is the main path for end users to send SMS messages. Using their standard Lotus Notes mail client (or any other client that is capable of sending mails via the Domino server) they send mail to a foreign domain that is linked to Sms4Domino.
The mail is processed by Sms4Domino, converted into a SMS message and transmitted via any of the available gateways.

In the following documents we will explain the options for the end user and provide some insight in the processing by Sms4Domino.

Formatting the recipient 's mail address

The most important thing the end user should know is how to address a mail message in order to deliver it as a SMS message. The procedure is slightly different for mail delivered to the server via the Domino router versus mail delivered via the SMTP listener.

Addressing format when using the Lotus Notes client, Traveler, iNotes, ...

Lotus Notes uses the @ character to specify the Domino domain name. The administrator is free to choose the name of the foreign domain that corresponds to Sms4Domino. Let's assume the foreign domain is called Sms4Domino. The mail recipient should be addressed as

name@number@foreigndomainname (e.g. John Doe@0474965588@sms)
number@foreigndomainname (e.g. 0474965588@sms)

The first part (*name*) is only used as information to the creator of the mail. It is not used at all by Sms4Domino.

The second part (*number*) is the phone number of the recipient. The number is cleaned, transformed and filtered by Sms4Domino. What remains should be a valid number that is accepted by the GSM network. The pre-processing on GSM numbers is explained in a separate document.

The third and last part (*foreigndomainname*) is the name of the foreign domain, linked to the Sms4Domino configuration database, that was specified by the Domino administrator.

Example: John Doe@+32474856978@Sms4Domino

Addressing format when sending mail via some SMTP client

Mail addressing should follow the Internet standard RFC 822. The @ character is used to separate the local part from the Internet domain name. Only one @ character is allowed in the address. Domino uses the % character to insert the Domino domain name into the local part of the address.

Suppose an application uses SMTP to generate mail messages via Lotus Domino. The Domino SMTP listener accepts mail for the Internet domain name mycompany.com. When the application needs to send a SMS to 32474856978 the recipient's address will be

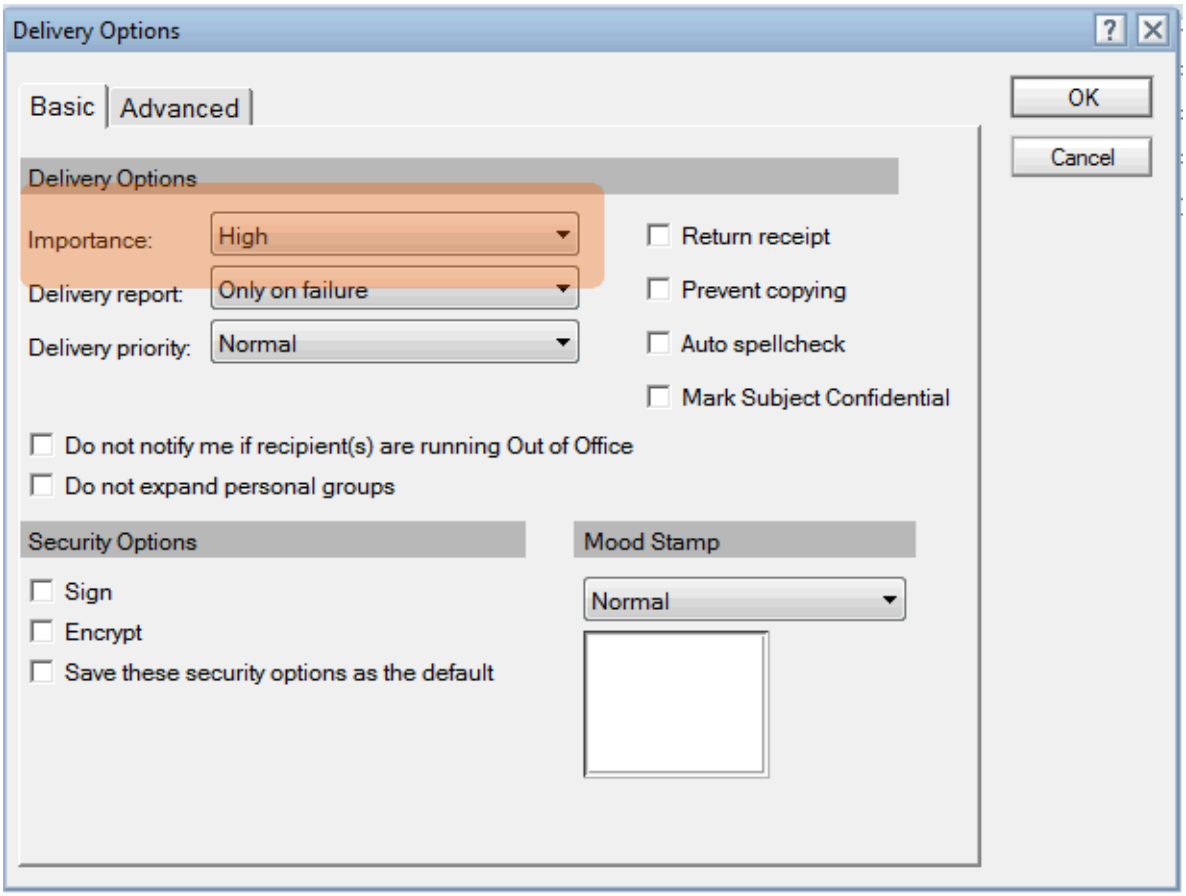
John.Doe%32474856978%Sms4Domino@mycompany.com

The sending server should be allowed to relay to the Sms4Domino domain via the reeiving server.

Sending a Flash SMS message

A Flash SMS appears directly on the phone's screen, instead of the 'Inbox'. Its an useful alternative to normal SMS when you want to catch the recipients attention immediately. The recipient may have the option of 'Saving' the Flash SMS to his 'Inbox'.

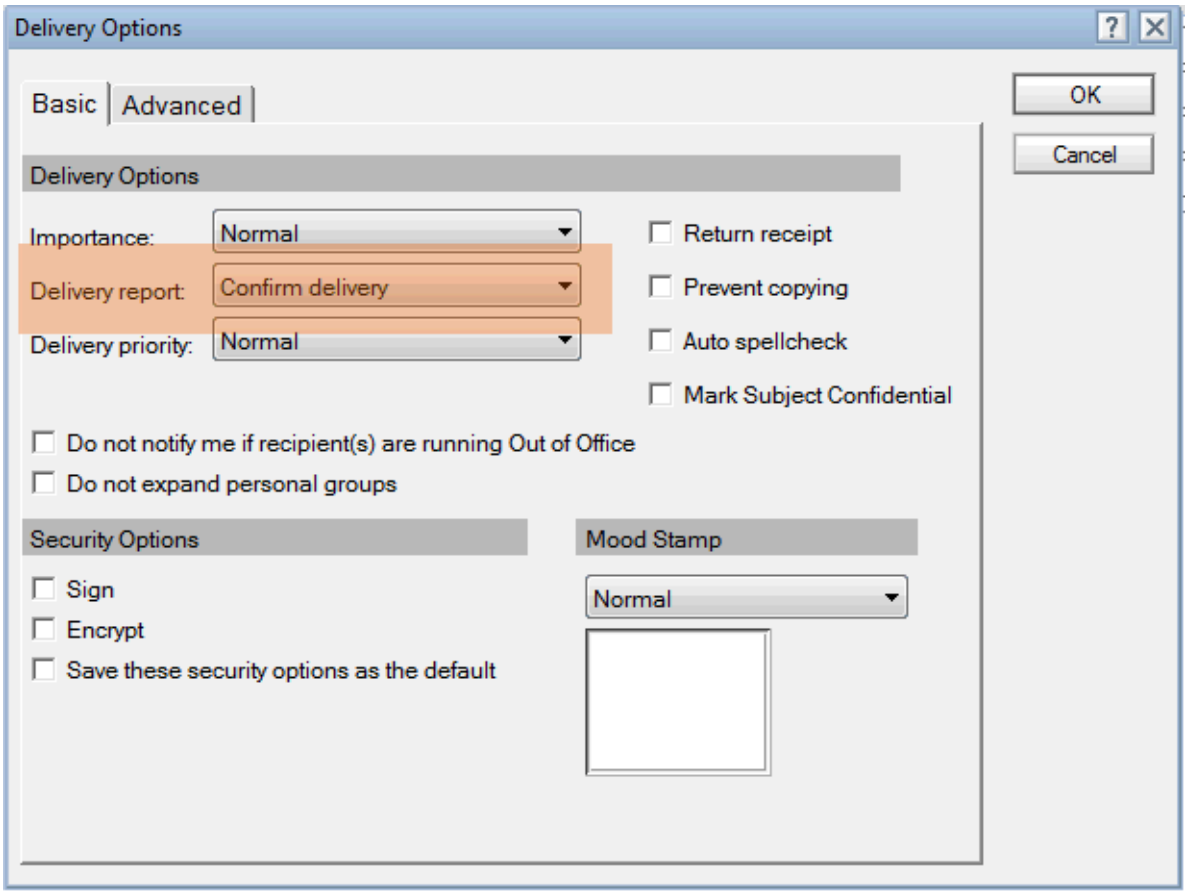
Before sending the message the user should specify the *Delivery options*. Sms4Domino will send *high importance* mail messages as a Flash SMS.



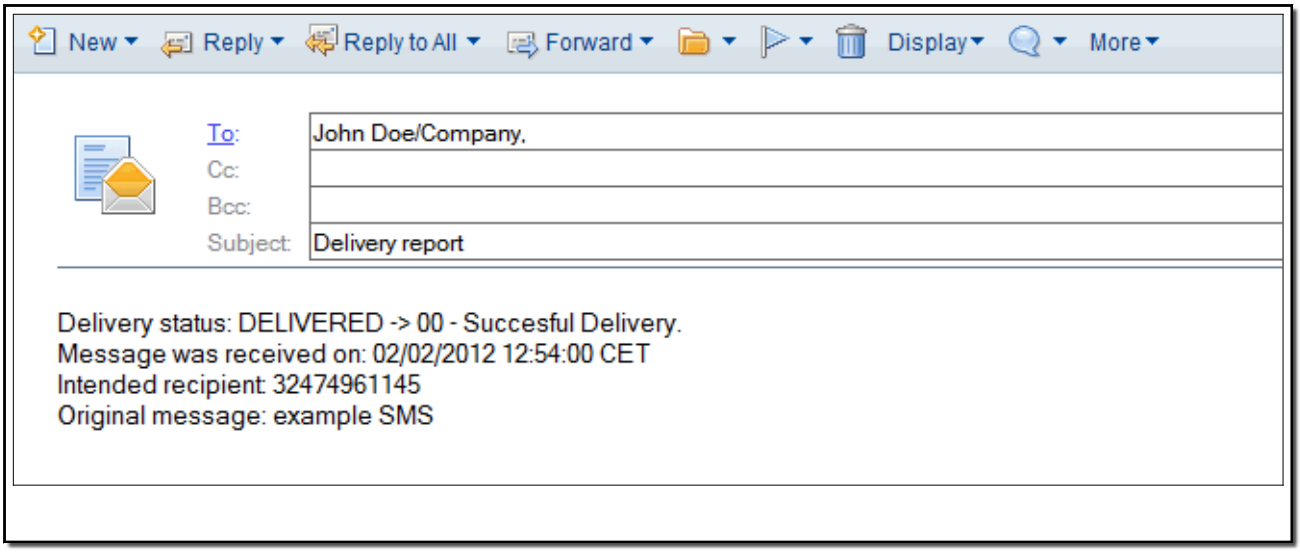
Delivery confirmation

Some GSM networks may return a delivery confirmation when SMS was delivered to the recipient's phone.

The mail setting *Delivery report = Confirm delivery* or *Trace entire path* is recognized by Sms4Domino.



When the operator returns the delivery confirmation or failure to Sms4Domino, this confirmation is converted in a mail message and returned to the sender.

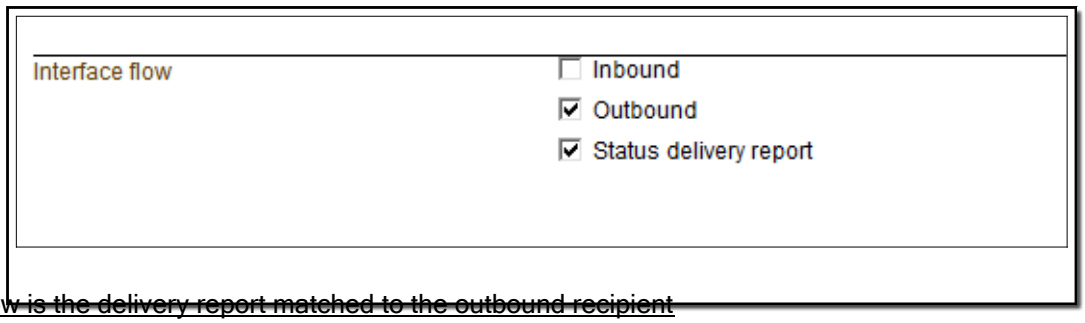


Background information

Delivery reports may not work as expected. All elements involved are described here.

Configuration of the Sms4Domino mail interface document

The mail interface document must have enabled the receipts of status delivery reports

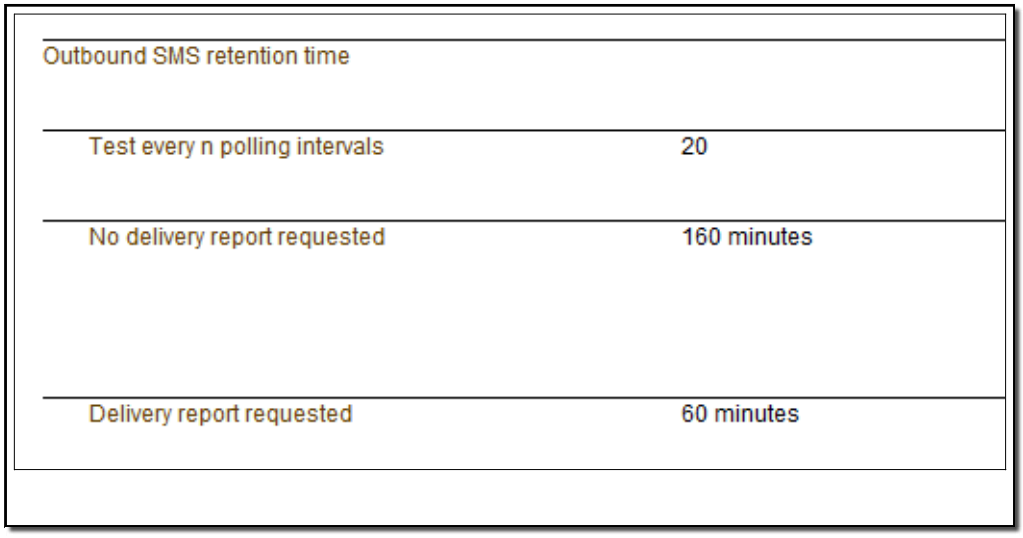


How is the delivery report matched to the outbound recipient

The end user sends a SMS message to the number 12345678. The GSM network assigns a sequence number to this Sms message. A few minutes later the delivery report is received by Sms4Domino. This delivery report contains the sequence number and the phone number where the Sms was delivered.

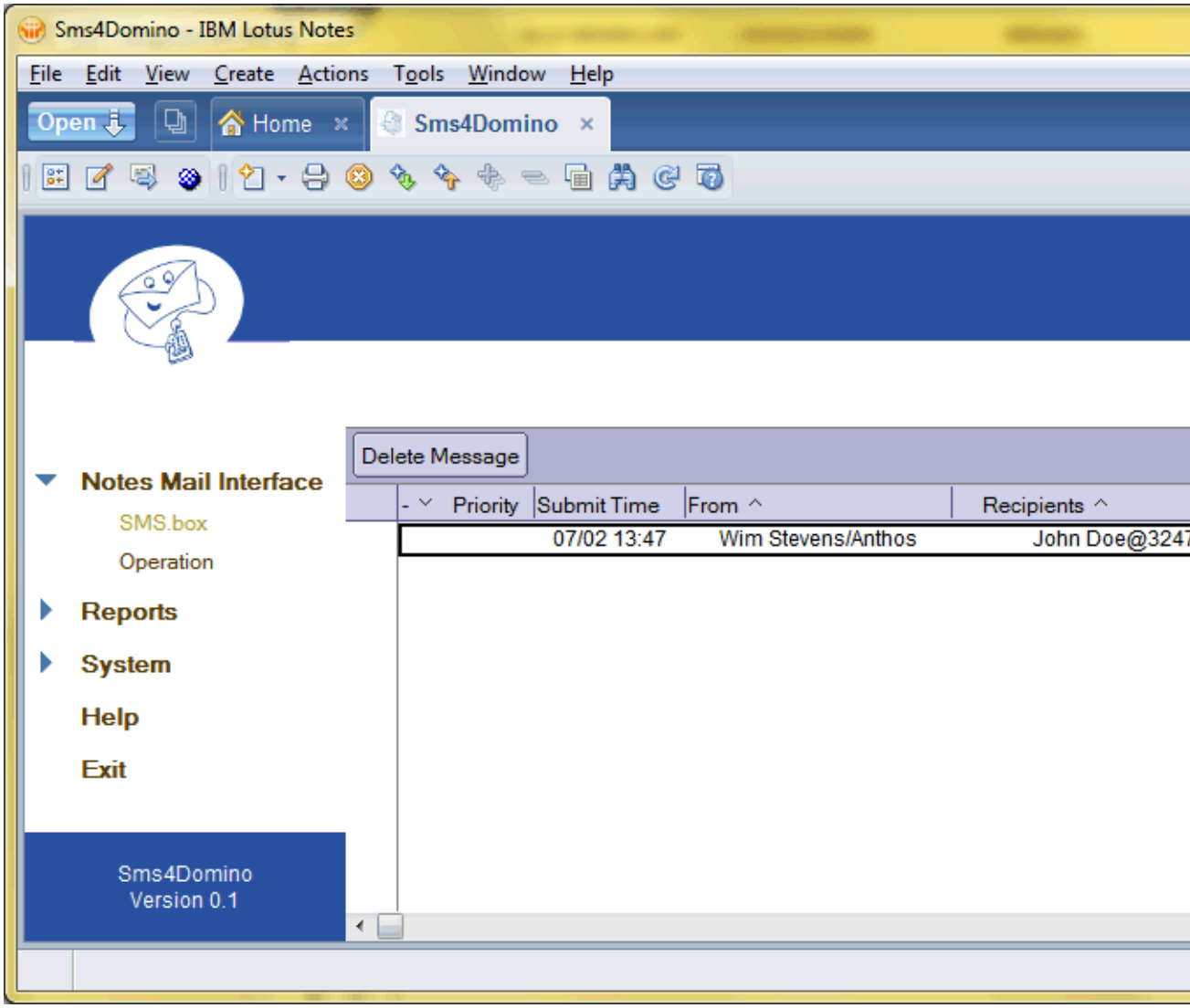
The sequence number is only 8 bits wide. So there are only 256 distinct sequence numbers. In heavily used environments Sms4Domino may find more than one outbound Sms with the same sequence number. A better match is achieved by combining the sequence number with the recipient's phone number. However this match may fail because the phone nunber in the delivery report could be different from the phone number in the outbound Sms. E.g. the delivery report may prefix the number with the country code. Sms4Domino requires an exact match between the outbound phone number and the one specified in the delivery report.

In order to be able to match the delivery report with the outbound Sms, Sms4Domino must keep the outbound Sms long enough in the Domino configuration database. This is defined by the setting *Outbound SMS retention time* on the mail interface document.



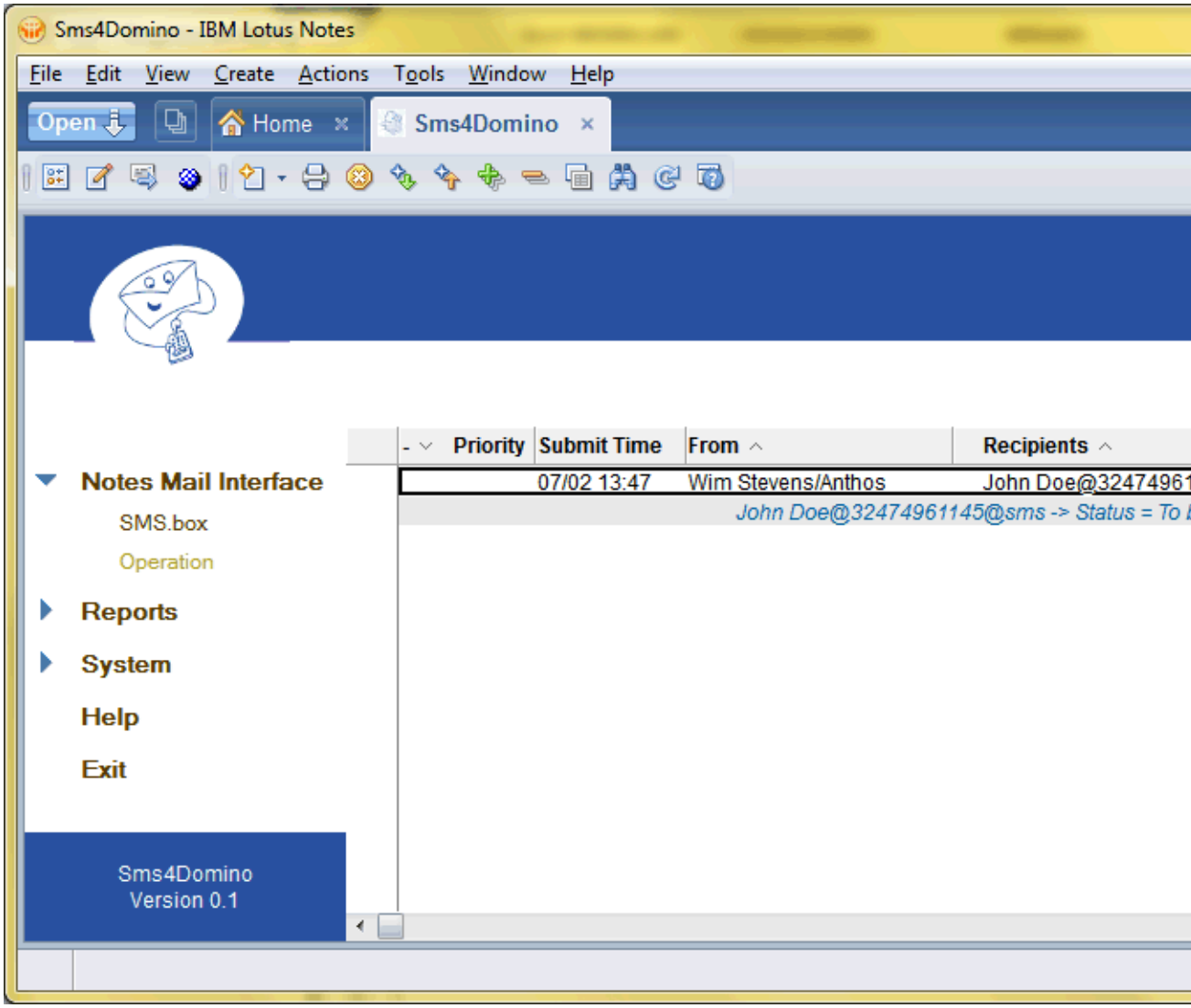
Processing by the mail interface

Mails delivered by the Domino router into the configuration database appear in the view *Notes Mail Interface -> SMS box*

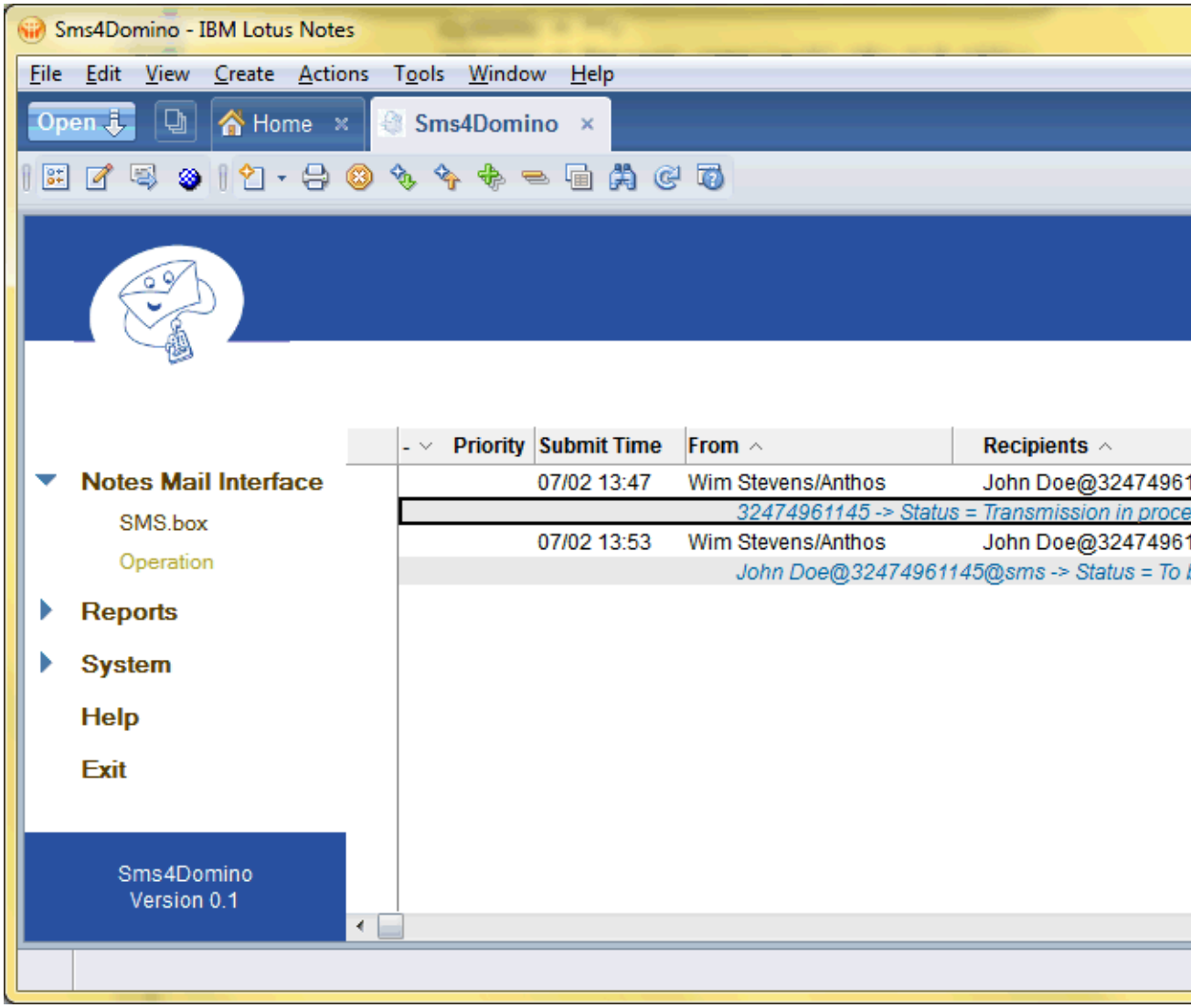


Only the SMS recipients are displayed in the column *Recipients.*

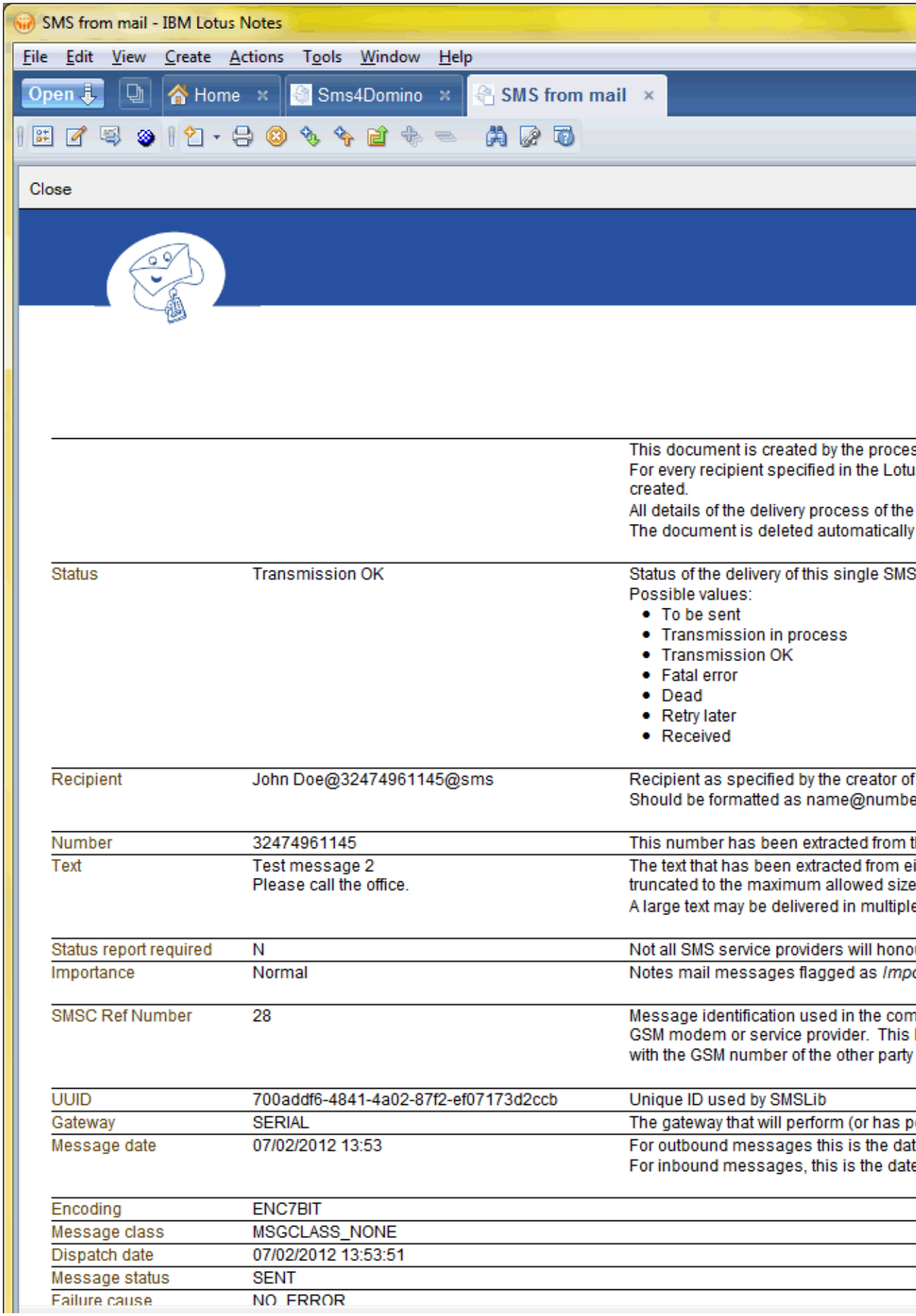
Sms4Domino polls every x seconds the SMS.box. When a new mail is discovered all recipients are extracted. For every recipient a new response document is created. The response documents are visible in the view *Notes Mail Interface -> Operation.*

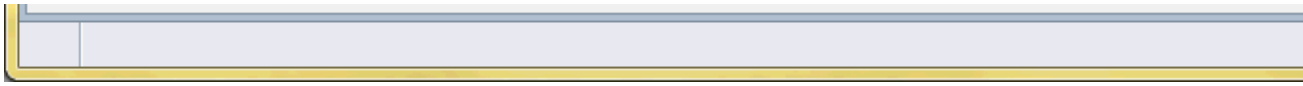


The initial status of the SMS is *To be sent.* After a few seconds and when a gateway becomes available the transmission is started.



The Sms response document may be opened (in read mode). All information related to the SMS is displayed and will be updated in real time by Sms4Domino.


SMS from mail - IBM Lotus Notes
File Edit View Create Actions Tools Window Help
Open
Home
Sms4Domino
SMS from mail
Close
This document is created by the proces
For every recipient specified in the Lotu
created.
All details of the delivery process of the
The document is deleted automatically
Status
Transmission OK
Status of the delivery of this single SMS
Possible values:
To be sent
Transmission in process
Transmission OK
Fatal error
Dead
Retry later
Received
Recipient
John Doe@32474961145@sms
Recipient as specified by the creator of
Should be formatted as name@numbe
Number
32474961145
This number has been extracted from t
Text
Test message 2
Please call the office.
The text that has been extracted from ei
truncated to the maximum allowed size
A large text may be delivered in multiple
Status report required
N
Not all SMS service providers will hono
Importance
Normal
Notes mail messages flagged as Impo
SMSC Ref Number
28
Message identification used in the com
GSM modem or service provider. This
with the GSM number of the other party
UUID
700addf6-4841-4a02-87f2-ef07173d2ccb
Unique ID used by SMSLib
Gateway
SERIAL
The gateway that will perform (or has p
Message date
07/02/2012 13:53
For outbound messages this is the dat
For inbound messages, this is the date
Encoding
ENC7BIT
Message class
MSGCLASS_NONE
Dispatch date
07/02/2012 13:53:51
Message status
SENT
Failure cause
NO_ERROR



After some time the documents in the view are deleted by Sms4Domino.

Supported platforms and configurations

Supported operating systems

The current version of Plug-in for Lotus Domino has been tested on Windows/2003 and Windows/2008 for Intel platforms in 32 and 64 bit mode.

The software requires a Domino R8 server.

For performing administrative actions a Windows based Lotus Notes clients , version 7 or 8, must be used.