# CONTENTS

1 Overview
   1.1 Overall schema .................................................. 1
   1.2 SMSD operation .................................................. 2

2 Usage
   2.1 Storing Messages in Backend ................................. 3
   2.2 Creating Messages to Send .................................. 3
   2.3 Notification about Received Messages ...................... 3
   2.4 Monitoring SMSD Status ..................................... 3
   2.5 Reporting Bugs ................................................. 3

3 Program Manuals
   3.1 gammu-smsd ..................................................... 5
   3.2 gammu-smsd-inject ............................................ 7
   3.3 gammu-smsd-monitor .......................................... 8

4 SMSD Configuration File
   4.1 Description ..................................................... 11
   4.2 General parameters of SMS daemon .......................... 11
   4.3 Database backends options .................................. 15
   4.4 Message filtering .............................................. 17
   4.5 Examples ......................................................... 18

5 RunOnReceive Directive
   5.1 Description ..................................................... 21
   5.2 Environment .................................................... 21
   5.3 Examples ......................................................... 22

6 Backend services
   6.1 Files backend .................................................. 25
   6.2 SQL Service ..................................................... 26
   6.3 MySQL Backend ............................................... 31
   6.4 PostgreSQL Backend ......................................... 37
   6.5 DBI Backend ................................................... 42
   6.6 ODBC Backend ................................................ 45
   6.7 Null Backend .................................................. 46
   6.8 SMSD Database Structure ................................... 46

7 Developer documentation
   7.1 Backend services ............................................... 53
Gammu SMS Daemon is a program that periodically scans GSM modem for received messages, stores them in defined storage and also sends messages enqueued in this storage.

1.1 Overall schema

The interactions of SMS Daemon and related components can be seen on following picture.
1.2 SMSD operation

The SMSD operation consist of several steps.

1. Process command line options.
2. Configure backend service.
3. **Main loop is executed until it is signalled to be terminated.**
   (a) Try to connect to phone if not connected.
   (b) Check for security code if configured (configured by `CheckSecurity`).
   (c) Check for received messages (frequency configured by `ReceiveFrequency`).
   (d) Check for reset of the phone if configured (frequency configured by `ResetFrequency`).
   (e) Check for messages to send (frequency configured by `CommTimeout`).
   (f) Check phone status (frequency configured by `StatusFrequency`).
   (g) Sleep for defined time (`LoopSleep`).
4. Backend service is freed.
CHAPTER
TWO

USAGE

This chapter will describe basic ways of using SMSD. Its use is not limited to these, but they can give you overview of SMSD abilities.

2.1 Storing Messages in Backend

The standard mode of operating SMSD. You simply configure backend service, and all received messages will end up in it and any message you put into outbox storage will be sent.

2.2 Creating Messages to Send

Creating of messages to send heavily depends on service backend you use. Most of them support `gammu-smsd-inject`, which can be used to construct the message, or you can just insert message manually to the backend storage.

Alternatively you can use `SMSD.InjectSMS()` (from C) or using `gammu.smsd.SMSD.GetStatus()` (from Python).

2.3 Notification about Received Messages

Once SMSD receives message and stores it in backend service, it can invoke your own program to do any message processing, see `RunOnReceive Directive`.

2.4 Monitoring SMSD Status

You can use `gammu-smsd-monitor` to monitor status of SMSD. It uses shared memory segment to get current status of running SMSD.

Alternatively you can get the same functionality from libGammu using `SMSD.GetStatus()` or python-gammu using `gammu.smsd.SMSD.GetStatus()`.

2.5 Reporting Bugs

Before reporting a bug, please enable verbose logging in SMSD configuration:

```plaintext
[smsd]
debugevel = 255
logfile = smsd.log
```

and include this verbose log within bug report.
CHAPTER THREE

PROGRAM MANUALS

3.1 gammu-smsd

3.1.1 Synopsis

gammu-smsd [OPTION]...

3.1.2 Description

This manual page documents briefly the gammu-smsd command.

gammu-smsd is a program that periodically scans GSM modem for received messages, stores them in defined storage and also sends messages enqueued in this storage.

The daemon can reload configuration file after sending hangup signal (SIGHUP) and properly terminates itself on SIGINT and SIGTERM.

Program accepts following options (please note that long options might be not accepted on some platforms):

- **-h, --help**
  Shows help.

- **-v, --version**
  Shows version information and compiled in features.

- **-c, --config=FILE**
  Configuration file to use, default is /etc/gammu-smsdrc, on Windows there is no default and configuration file path has to be always specified.
  
  If you run SMSD as a system daemon (or service), it is recommended to use absolute path to configuration file as startup directory might be different than you expect.
  
  See SMSD Configuration File for configuration file documentation.

- **-p, --pid=FILE**
  Lock file for storing pid, empty for no locking. Not supported on Windows.

- **-U, --user=USER**
  Drop daemon privileges to chosed user after starting.

- **-G, --group=GROUP**
  Drop daemon privileges to chosen group after starting.

- **-d, --daemon**
  Daemonize program on startup. Not supported on Windows.
-i, -install-service
   Installs SMSD as a Windows service.
-u, -uninstall-service
   Uninstalls SMSD as a Windows service.
-s, -start-service
   Starts SMSD Windows service.
-k, -stop-service
   Stops SMSD Windows service.
-f, -max-failures=count
   Terminate after defined number of failures. Use 0 to not terminate (this is default).
-X, -suicide=seconds
   Kills itself after number of seconds.
-S, -run-service
   Runs program as SMSD Windows service. This should not be used manually, but only Windows Service manager
   should use this command.
-n, -service-name=name
   Defines name of a Windows service. Each service requires an unique name, so if you want to run several SMSD
   instances, you have to name each service differently. Default is “GammuSMSD”.

3.1.3 Examples

Linux/Unix Examples

Start SMSD as a daemon on Linux:

```
gammu-smsd --config /etc/gammu-smsdrc --pid /var/run/gammu-smsd.pid --daemon
```

Start SMSD as a daemon on Linux with reduced privileges:

```
gammu-smsd --config /etc/gammu-smsdrc --pid /var/run/gammu-smsd.pid --daemon --user gammu --group gammu
```

SMDS as a system wide daemon

To use SMSD as a daemon, you might want to use init script which is shipped with Gammu in contrib/init directory. It
is not installed by default, either install it manually or check INSTALL file for instructions.

Under Windows 7 you might need to disable UAC (user account control) before you will be able to install SMSD service.

Windows Service Examples

Install Gammu SMSD Windows service:

```
gammu-smsd.exe -c c:\Gammu\smsdrc -i
```

Install two instances of SMSD Windows service:

```
gammu-smsd.exe -c c:\Gammu\smsdrc-1 -n Gammu-first-phone -i
gammu-smsd.exe -c c:\Gammu\smsdrc-2 -n Gammu-second-phone -i
```
To uninstall a Windows service:

```bash
gammu-smsd.exe -u
```

**Troubleshooting Windows Service**

If Gammu fails to start as a Windows service (you will usually get “Error 1053: The service did not respond to the start or control request in a timely fashion”), first check your SMSD logs. If they do not contain any useful hint, try starting SMSD manually with exactly same parameters as you installed the service (without `-i`).

For example the command line can look like:

```bash
gammu-smsd.exe -c smsdrc
```

You now should be able to get errors from SMSD even if it fails to start as a service.

### 3.1.4 Known Limitations

You can not use same phone by more programs in same time. However in case you did not enable locking in `[gammu]` section, it might be able to start the communication with phone from more programs. In this case neither of the programs will probably work.

There is no way to detect that SMS message is reply to another by looking at message headers. The only way to achieve this is to add some token to the message and let the user include it in the message on reply.

**3.2 gammu-smsd-inject**

#### 3.2.1 Synopsis

```bash
gammu-smsd-inject [OPTION]... MESSAGETYPE RECIPIENT [MESSAGE_PARAMETER]...
```

#### 3.2.2 Description

This manual page documents briefly the `gammu-smsd-inject` command.

`gammu-smsd-inject` is a program that enqueues message in Gammu SMS Daemon, which will be later sent by the daemon using connected GSM modem.

Support for this program depends on features available in currently used SMSD service backend, however currently it is supported by all of them.

Program accepts following options (please note that long options might be not accepted on some platforms):

- `-h`, `--help`
  Shows help.

- `-v`, `--version`
  Shows version information and compiled in features.

- `-c`, `--config=file`
  Configuration file to use, default is `/etc/gammu-smsdrc`, on Windows there is no default and configuration file path has to be always specified.

For description of message types and their parameters, please check documentation for `gammu savesms`.
3.2.3 Examples

To check it out, you need to have configuration file for SMSD, see *SMSD Configuration File* for more details about it.

Inject text message up to standard 160 chars:

```
echo "All your base are belong to us" | gammu-smsd-inject TEXT 123456
```
or

```
gammu-smsd-inject TEXT 123456 -text "All your base are belong to us"
```

Inject long text message:

```
echo "All your base are belong to us" | gammu-smsd-inject TEXT 123456 -len 400
```
or

```
gammu-smsd-inject TEXT 123456 -len 400 -text "All your base are belong to us"
```
or

```
gammu-smsd-inject EMS 123456 -text "All your base are belong to us"
```

Inject some funky message with predefined sound and animation from 2 bitmaps:

```
gammu-smsd-inject EMS 123456 -text "Greetings" -defsound 1 -text "from Gammu" -tone10 axelf.txt -animation 2 file1.bmp file2.bmp
```

Inject protected message with ringtone:

```
gammu-smsd-inject EMS 123456 -protected 2 -variablebitmaplong ala.bmp -toneSElong axelf.txt -toneSE ring.txt
```

3.3 gammu-smsd-monitor

3.3.1 Synopsis

```
gammu-smsd-monitor [OPTION]...
```

3.3.2 Description

This manual page documents briefly the *gammu-smsd-monitor* command.

*gammu-smsd-monitor* is a program that monitors state of Gammu SMS Daemon. It periodically displays information about phone and number of processed messages.

Program accepts following options (please note that long options might be not accepted on some platforms):

- **-h, --help**
  Shows help.

- **-v, --version**
  Shows version information and compiled in features.

- **-c, --config=file**
  Configuration file to use, default is /etc/gammu-smsdrc, on Windows there is no default and configuration file path has to be always specified.
-l, \texttt{-loops=count}
  Number of loops, by default monitor loops infinitely.

-d, \texttt{-delay=seconds}
  Delay between polling SMSD state, default is 20 seconds.

-C, \texttt{-csv}
  Print output in comma separated values format:

  \begin{verbatim}
  client;phone ID;IMEI;sent;received;failed;battery;signal
  \end{verbatim}
CHAPTER
FOUR

SMSD CONFIGURATION FILE

4.1 Description

gammu-smsd reads configuration from a config file. It’s location can be specified on command line, otherwise default path /etc/gammu-smsdrc is used.

This file use ini file syntax, see ini.

Configuration file of gammu-smsd consists of at least two sections - [gammu] and [smsd]. For SQL Service you can also use [sql].

The [gammu] section is configuration of a phone connection and is same as described in gammurc with the only exception that LogFile is ignored and common logging for gammu library and SMS daemon is used. However the LogFormat directive still configures how much messages gammu emits.

[smsd]

The [smsd] section configures SMS daemon itself, which are described in following subsections. First general parameters of SMS daemon are listed and then specific parameters for storage backends.

[include_numbers]
List of numbers from which accept messages, see Message filtering.

[exclude_numbers]
List of numbers from which reject messages, see Message filtering.

[include_smsg]
List of SMSC numbers from which accept messages, see Message filtering.

[exclude_smsg]
List of SMSC numbers from which reject messages, see Message filtering.

[sql]
Configure SQL queries used by SQL Service, you usually don’t have to modify them.

See Also:
Configurable queries

4.2 General parameters of SMS daemon

Service
SMSD service to use, one of following choices:
FILES stores messages in files, see Files backend for details

NULL does not store messages at all, see Null Backend for details

SQL stores messages in SQL database, see SQL Service for details New in version 1.28.93.

MYSQL synonym for Service = SQL and Driver = native_mysql
stores messages in MySQL database, see MySQL Backend for details Deprecated since version 1.28.93.

PGSQL synonym for Service = SQL and Driver = native_pgsql
stores messages in PostgreSQL database, see PostgreSQL Backend for details Deprecated since version 1.28.93.

DBI synonym for Service = SQL and Driver = DBI driver
stores messages in any database supported by libdbi, this includes MSSQL, MySQL, PostgreSQL or SQLite databases, see DBI Backend for details Deprecated since version 1.28.93.

Note: Availability of backends depends on platform and compile time configuration.

PIN
PIN for SIM card. This is optional, but you should set it if your phone after power on requires PIN.

NetworkCode
Network personalisation password. This is optional, but some phones require it after power on.

PhoneCode
Phone lock password. This is optional, but some phones require it after power on.

LogFile
File where SMSD actions are being logged. You can also use special value syslog which will send all messages to syslog daemon. On Windows another special value eventlog exists, which will send logs to Windows Event Log.

If you run SMSD as a system daemon (or service), it is recommended to use absolute path to log file as startup directory might be different than you expect.

Default is to provide no logging.

DebugLevel
Debug level for SMSD. The integer value should be sum of all flags you want to enable.

1 enables basic debugging information

2 enables logging of SQL queries of service backends

4 enables logging of gammu debug information

Generally to get as much debug information as possible, use 255.

Default is 0, what should mean no extra information.

CommTimeout
How many seconds should SMSD wait after there is no message in outbox.

Default is 30.

SendTimeout
Shows how many seconds SMSD should wait for network answer during sending sms. If nothing happen during this time, sms will be resent.

Default is 30.
MaxRetries
How many times will SMSD try to resend message if sending fails.
Default is 1.

ReceiveFrequency
The number of seconds between testing for received SMSes, when the phone is busy sending SMSes. Normally a test for received SMSes is done every
CommTimeout seconds and after each sent SMS.
Default is 0 (not used).

StatusFrequency
The number of seconds between refreshing phone status (battery, signal) stored in shared memory and possibly in service backends. Use 0 to disable.
Default is 15.

LoopSleep
The number of seconds how long will SMSD sleep before checking for some activity. Please note that setting this to higher value than 1 will have effects to other time based configurations, because they will be effectively rounded to multiply of this value.
Default is 1.

MultipartTimeout
The number of seconds how long will SMSD wait for all parts of multipart message. If all parts won’t arrive in time, parts will be processed as separate messages.
Default is 600 (10 minutes).

CheckSecurity
Whether to check if phone wants to enter PIN.
Default is 1 (enabled).

CheckBattery
Whether to check phone battery state periodically.
Default is 1 (enabled).

CheckSignal
Whether to check signal level periodically.
Default is 1 (enabled).

ResetFrequency
The number of seconds between performing a preventive soft reset in order to minimize the cases of hanging phones e.g. Nokia 5110 will sometimes freeze to a state when only after unmounting the battery the phone will be functional again.
Default is 0 (not used).

HardResetFrequency
New in version 1.28.92.

Warning: For some phones hard reset means deleting all data in it. Use ResetFrequency, unless you know what you are doing.

The number of seconds between performing a preventive hard reset in order to minimize the cases of hanging phones.
Default is 0 (not used).
**DeliveryReport**

Whether delivery reports should be used, one of no, log, sms.

- log one line log entry,
- sms store in inbox as a received SMS
- no no delivery reports

Default is no.

**DeliveryReportDelay**

Delay in seconds how long is still delivery report considered valid. This depends on brokeness of your network (delivery report should have same timestamp as sent message). Increase this if delivery reports are not paired with sent messages.

Default is 600 (10 minutes).

**PhoneID**

String with info about phone used for sending/receiving. This can be useful if you want to run several SMS daemons.

When you set PhoneID, all messages (including injected ones) will be marked by this string (stored as SenderID in the database) and it allows more SMS daemons to share a single database.

This option has actually no effect with *Files backend*.

**RunOnReceive**

Executes a program after receiving message.

This parameter is executed through shell, so you might need to escape some special characters and you can include any number of parameters. Additionally parameters with identifiers of received messages are appended to the command line. The identifiers depend on used service backend, typically it is ID of inserted row for database backends or file name for file based backends.

Gammu SMSD waits for the script to terminate. If you make some time consuming there, it will make SMSD not receive new messages. However to limit breakage from this situation, the waiting time is limited to two minutes. After this time SMSD will continue in normal operation and might execute your script again.

The process has available lot of information about received message in environment, check *RunOnReceive Directive* for more details.

**RunOnFailure**

New in version 1.28.93. Executes a program on failure.

This can be used to proactively react on some failures or to interactively detect failure of sending message.

The program will receive optional parameter, which can currently be either INIT (meaning failure during phone initialization) or message ID, which would indicate error while sending the message.

**Note:** The environment with message (as is in *RunOnReceive*) is not passed to the command.

**IncludeNumbersFile**

File with list of numbers which are accepted by SMSD. The file contains one number per line, blank lines are ignored. The file is read at startup and is reread only when configuration is being reread. See Message filtering for details.

**ExcludeNumbersFile**

File with list of numbers which are not accepted by SMSD. The file contains one number per line, blank lines are ignored. The file is read at startup and is reread only when configuration is being reread. See Message filtering for details.
IncludeSMSCFile
File with list of SMSC numbers which are accepted by SMSD. The file contains one number per line, blank lines are ignored. The file is read at startup and is reread only when configuration is being reread. See Message filtering for details.

ExcludeSMSCFile
File with list of SMSC numbers which are not accepted by SMSD. The file contains one number per line, blank lines are ignored. The file is read at startup and is reread only when configuration is being reread. See Message filtering for details.

BackendRetries
How many times will SMSD backend retry operation.

The implementation on different backends is different, for database backends it generally means how many times it will try to reconnect to the server.

Default is 10.

Send
New in version 1.28.91. Whether to enable sending of messages.

Default is True.

Receive
New in version 1.28.91. Whether to enable receiving of messages.

Default is True.

4.3 Database backends options

All DBI, ODBC, MYSQL and PGSQL backends (see MySQL Backend, ODBC Backend, PostgreSQL Backend, DBI Backend for their documentation) supports same options for configuring connection to a database:

User
User name used for connection to a database.

Password
Password used for connection to a database.

Host
Database server address. It can also contain port or socket path after semicolon, for example localhost:/path/to/socket or 192.168.1.1:8000.

For ODBC this is used as Data source name.

Note: Some database servers differentiate usage of localhost (to use local socket) and 127.0.0.1 (to use locat TCP/IP connection). Please make sure your SMSD settings match the database server ones.

New in version 1.28.92.

PC
Synonym for Host. Deprecated since version 1.28.92.

Database
Name of database to use. Please note that you should create tables in this database before using gammu-smsd. SQL files for creating needed tables are included in documentation.

SkipSMSCNumber
When you send sms from some SMS centere you can have delivery reports from other SMSC number. You can
set here number of this SMSC used by you and Gammu will not check it’s number during assigning reports to
sent SMS.

**Driver**

SQL driver to use.

Can be either one of native drivers (odbc, native_mysql or native_pgsql) or **DBI Backend** driver.

Depends on what DBI drivers you have installed, DBI supports: mysql, freetds (provides access to MS SQL Server and Sybase), pgsql, sqlite, sqlite3, firebird and ingres, msql and oracle drivers are under development.

**SQL**

SQL dialect to use. This is specially useful with **ODBC Backend** where SMSD does not know which server it is
actually talking to.

Possible values:

- mysql - MySQL
- psql - PostgreSQL
- sqlite - SQLite
- mssql - Microsoft SQL Server
- sybase - Sybase
- access - Microsoft Access
- odbc - Generic ODBC

New in version 1.28.93.

See Also:

You can also completely customize SQL queries used as described in **SQL Queries**.

**DriversPath**

Path, where DBI drivers are stored, this usually does not have to be set if you have properly installed drivers.

**DBDir**

Database directory for some (currently only sqlite) DBI drivers. Set here path where sqlite database files are stored.

### 4.3.1 Files backend options

The FILES backend accepts following configuration options. See **Files backend** for more detailed service backend description. Please note that all path should contain trailing path separator (/ on Unix systems):

**InboxPath**

Where the received SMSes are stored.

Default is current directory.

**OutboxPath**

Where SMSes to be sent should be placed.

Default is current directory.

**SentSMSPath**

Where the transmitted SMSes are placed, if same as **OutboxPath** transmitted messages are deleted.

Default is to delete transmitted messages.
ErrorSMSPath
Where SMSes with error in transmission is placed.
Default is same as SentSMSPath.

InboxFormat
The format in which the SMS will be stored: detail, unicode, standard.

detail format used for message backup by gammu, see gammu-smsbackup.
unicode message text stored in unicode (UTF-16)
standard message text stored in system charset

The standard and unicode settings do not apply for 8-bit messages, which are always written raw as they are received with extension .bin.
Default is unicode.

---

Note: In detail format, all message parts are stored into single file, for all others each message part is saved separately.

OutboxFormat
The format in which messages created by gammu-smsd-inject will be stored, it accepts same values as InboxFormat.
Default is detail if Gammu is compiled in with backup functions, unicode otherwise.

TransmitFormat
The format for transmitting the SMS: auto, unicode, 7bit.
Default is auto.

4.4 Message filtering

SMSD allows one to process only limited subset of incoming messages. You can define filters for sender number in [include_numbers] and
[exclude_numbers] sections or using
IncludeNumbersFile and ExcludeNumbersFile directives.

If [include_numbers] section exists, all values (keys are ignored) from it are used as allowed phone numbers and no other message is processed. On the other side, in [exclude_numbers] you can specify numbers which you want to skip.

Lists from both sources are merged together. If there is any number in include list, only include list is used and only messages in this list are being accepted. If include list is empty, exclude list can be used to ignore messages from some numbers. If both lists are empty, all messages are accepted.

Similar filtering rules can be used for SMSC number filtering, they just use different set of configuration options - [include_smsc] and
[exclude_smsc] sections or IncludeSMSCFile and ExcludeSMSCFile directives.
4.5 Examples

There is more complete example available in Gammu documentation. Please note that for simplicity following examples do not include \texttt{[gammu]} section, you can look into \texttt{gammurc} for some examples how it can look like.

4.5.1 Files service

SMSD configuration file for FILES backend could look like:

```
[smsd]
Service = files
PIN = 1234
LogFile = syslog
InboxPath = /var/spool/sms/inbox/
OutboxPath = /var/spool/sms/outbox/
SentSMSPath = /var/spool/sms/sent/
ErrorSMSPath = /var/spool/sms/error/
```

4.5.2 MySQL service

If you want to use MYSQL backend, you will need something like this:

```
[smsd]
Service = sql
Driver = native_mysql
PIN = 1234
LogFile = syslog
User = smsd
Password = smsd
PC = localhost
Database = smsd
```

4.5.3 DBI service using SQLite

For \texttt{DBI Backend} backend, in this particular case SQLite:

```
[smsd]
Service = sql
Driver = sqlite3
DBDir = /var/lib/sqlite3
Database = smsd.db
```

4.5.4 ODBC service using MySQL

For \texttt{ODBC Backend} backend, in this particular case using DSN \texttt{smds} server:

```
[smsd]
Service = sql
Driver = odbc
Host = smsd
```

The DSN definition (in \texttt{~/.odbc.ini} on UNIX) for using MySQL server would look like:
4.5.5 Numbers filtering

Process only messages from 123456 number:

```
[include_numbers]
number1 = 123456
```

Do not process messages from evil number 666:

```
[exclude_numbers]
number1 = 666
```

4.5.6 Debugging

Enabling debugging:

```
[smsd]
debugevel = 255
logfile = smsd.log
```
RUNONRECEIVE DIRECTIVE

5.1 Description

Gammu SMSD can be configured by RunOnReceive directive (see SMSD Configuration File for details) to run defined program after receiving message.

This parameter is executed through shell, so you might need to escape some special characters and you can include any number of parameters. Additionally parameters with identifiers of received messages are appended to the command line. The identifiers depend on used service backend, typically it is ID of inserted row for database backends or file name for file based backends.

Gammu SMSD waits for the script to terminate. If you make some time consuming there, it will make SMSD not receive new messages. However to limit breakage from this situation, the waiting time is limited to two minutes. After this time SMSD will continue in normal operation and might execute your script again.

5.2 Environment

program is executed with environment which contains lot of information about the message. You can use it together with NULL service (see Null Backend) to implement completely own processing of messages.

5.2.1 Global variables

- **SMS_MESSAGES**
  Number of physical messages received.

- **DECODED_PARTS**
  Number of decoded message parts.

5.2.2 Per message variables

The variables further described as **SMS_1...** are generated for each physical message, where 1 is replaced by current number of message.

- **SMS_1_CLASS**
  Class of message.

- **SMS_1_NUMBER**
  Sender number.
5.2.3 Per part variables

The variables further described as `DECODED_1_...` are generated for each message part, where 1 is replaced by current number of part. Set are only those variables whose content is present in the message.

- `DECODED_1_TEXT`: Decoded long message text.
- `DECODED_1_MMS_SENDER`: Sender of MMS indication message.
- `DECODED_1_MMS_TITLE`: Title of MMS indication message.
- `DECODED_1_MMS_ADDRESS`: Address (URL) of MMS from MMS indication message.
- `DECODED_1_MMS_SIZE`: Size of MMS as specified in MMS indication message.

5.3 Examples

5.3.1 Activating RunOnReceive

To activate this feature you need to set `RunOnReceive` in the `SMSD Configuration File`.

```plaintext
[smsd]
RunOnReceive = /path/to/script.sh
```

5.3.2 Processing messages from the files backend

Following script (if used as `RunOnReceive` handler) passes message data to other program. This works only with the `Files backend`.

```bash
#!/bin/sh
INBOX=/path/to/smsd/inbox
PROGRAM=/bin/cat
for ID in "@" ; do
    $PROGRAM < $INBOX/$ID
done
```

5.3.3 Passing message text to program

Following script (if used as `RunOnReceive` handler) passes message text and sender to external program.

```bash
#!/bin/sh
PROGRAM=/bin/echo
for i in 'seq $SMS_MESSAGES' ; do
    eval "$PROGRAM "\${SMS_${i}_NUMBER}\" \"\${SMS_${i}_TEXT}\""
done
```
5.3.4 Passing MMS indication parameters to external program

Following script (if used as RunOnReceive handler) will write information about each received MMS indication to the log file. Just replace echo command with your own program to do custom processing.

```bash
#!/bin/sh
if [ $DECODED_PARTS -eq 0 ]; then
  # No decoded parts, nothing to process
  exit
fi
if [ "$DECODED_1_MMS_ADDRESS" ]; then
  echo "$DECODED_1_MMS_ADDRESS" "$DECODED_1_MMS_SENDER" "$DECODED_1_MMS_TITLE" >> /tmp/smsd-mms.log
fi
```

5.3.5 Processing message text in Python

Following script (if used as RunOnReceive handler) written in Python will concatenate all text from received message:

```python
#!/usr/bin/python
import os
import sys

numparts = int(os.environ['DECODED_PARTS'])

# Are there any decoded parts?
if numparts == 0:
    print('No decoded parts!'
    sys.exit(1)

# Get all text parts
text = ''
for i in range(1, numparts + 1):
    varname = 'DECODED_%d_TEXT' % i
    if varname in os.environ:
        text = text + os.environ[varname]

# Do something with the text
print('Number $s have sent text: $s' % (os.environ['SMS_1_NUMBER'], text))
```
The backend service is used to store messages (both incoming and queue of outgoing ones).

### 6.1 Files backend

FILES backend stores all data on a filesystem in folders defined by configuration (see SMSD Configuration File for description of configuration options).

#### 6.1.1 Receiving of messages

Received messages are stored in a folder defined by configuration. The filename will be `IN<date>_<time>_<serial>_<sender>_<sequence>_<ext>`, for example `NN20021130_021531_00_+4540900931640979_00.txt`.

Explanation of fields:
- `<date>` date in format `YYYYMMDD`
- `<time>` time in format `HHMMSS`
- `<sender>` sender number
- `<serial>` order of a message (in case more messages were received at same time), in format `NN`
- `<sequence>` part of the message for multipart messages, in format `NN`
- `<ext>` extension, `txt` for text message, 8-bit messages are stored with `bin` extension, `smsbackup` for `gammu-smsbackup`

The content of the file is content of the message and the format is defined by configuration directive `InboxFormat` (see SMSD Configuration File).

#### 6.1.2 Transmitting of messages

Transmitted messages are read from a folder defined by configuration. The filename should be one of the following formats:

- `OUT<recipient>_<ext>`
- `OUT<priority>_<recipient>_<serial>_<ext>`
- `OUT<priority><date>_<time>_<serial>_<recipient>_<note>_<ext>`

Explanation of fields:
<recipient> recipient number where to send message
<priority> an alphabetic character (A-Z) A = highest priority
<ext> txt for normal text SMS, smsbackup for gammu-smsbackup
<note> any arbitrary text which is ignored

For text messages, you can additionally append flags to extension:

- d delivery report requested
- f flash SMS
- b WAP bookmark as name,URL

Other fields are same as for received messages.

For example OUTG20040620_193810_123_+4512345678_xpq.txtdf is a flash text SMS requesting delivery reports.

SMSes will be transmitted sequentially based on the file name. The contents of the file is the SMS to be transmitted (in Unicode or standard character set).

The contents of the file is the SMS to be transmitted (in Unicode or standard character set), for WAP bookmarks it is split on as Name,URL, for text messages whole file content is used.

Please note that if file is not in Unicode, encoding is detected based on locales, which do not have to be configured if SMSD is running from init script. If this is your case, please add locales definition to init script.

6.2 SQL Service

SQL service stores all its data in database. It can use one of these SQL backends (configuration option Driver in smsd section):

- native_mysql for MySQL Backend
- native_pgsql for PostgreSQL Backend
- odbc for ODBC Backend
- drivers supported by DBI for DBI Backend, which include:
  - sqlite3 - for SQLite 3
  - mysql - for MySQL
  - psql - for PostgreSQL
  - freetds - for MS SQL Server or Sybase

6.2.1 SQL connection parameters

Common for all backends:

- User - user connecting to database
- Password - password for connecting to database
- Host - database host or data source name
- Database - database name
- Driver - native_mysql, native_pgsql, odbc or DBI one
6.2.2 SQL Queries

Almost all queries are configurable. You can edit them in [sql] section. There are several variables used in SQL queries. We can separate them into three groups:

- phone specific, which can be used in every query, see Phone Specific Parameters
- SMS specific, which can be used in queries which works with SMS messages, see SMS Specific Parameters
- query specific, which are numeric and are specific only for given query (or set of queries), see Configurable queries

### Phone Specific Parameters

- %I IMEI of phone
- %P PHONE ID (hostname)
- %N client name (eg. Gammu 1.12.3)

### SMS Specific Parameters

- %R remote number
- %C delivery datetime
- %e delivery status on receiving or status error on sending
- %t message reference
- %d receiving datetime for received sms
- %E encoded text of SMS
- %c SMS coding (ie 8bit or UnicodeNoCompression)
- %F sms centre number
- %u UDH header
- %x class
- %T decoded SMS text
- %A CreatorID of SMS (sending sms)
- %V relative validity

---

1 Sender number for received messages (insert to inbox or delivery notifications), destination otherwise.
6.2.3 Configurable queries

All configurable queries can be set in [sql] section. Sequence of rows in selects are mandatory.

All default queries noted here are noted for MySQL. Actual time and time addition are selected for default queries during initialization.

**delete_phone**
Deletes phone from database.

Default value:
```
DELETE FROM phones WHERE IMEI = %I
```

**insert_phone**
Inserts phone to database.

Default value:
```
INSERT INTO phones (IMEI, ID, Send, Receive, InsertIntoDB, TimeOut, Client, Battery, SignalStrength)
VALUES (%I, %P, %1, %2, NOW(), (NOW() + INTERVAL 10 SECOND) + 0, %N, -1, -1)
```

Query specific parameters:

%1 enable send (yes or no) - configuration option Send

%2 enable receive (yes or no) - configuration option Receive

**save_inbox_sms_select**
Select message for update delivery status.

Default value:
```
SELECT ID, Status, SendingDateTime, DeliveryDateTime, SMSCNumber FROM sentitems
WHERE DeliveryDateTime IS NULL AND SenderID = %P AND TPMR = %t AND DestinationNumber = %R
```

**save_inbox_sms_update_delivered**
Update message delivery status if message was delivered.

Default value:
```
UPDATE sentitems SET DeliveryDateTime = %C, Status = %1, StatusError = %e WHERE ID = %2 AND TPMR = %t
```

Query specific parameters:

%1 delivery status returned by GSM network

%2 ID of message

**save_inbox_sms_update**
Update message if there is an delivery error.

Default value:
```
UPDATE sentitems SET Status = %1, StatusError = %e WHERE ID = %2 AND TPMR = %t
```

Query specific parameters:

%1 delivery status returned by GSM network

%2 ID of message

**save_inbox_sms_insert**
Insert received message.

Default value:
**INSERT INTO** inbox (ReceivingDateTime, Text, SenderNumber, Coding, SMSCNumber, UDH, Class, TextDecoded, RecipientID) **VALUES** (%d, %E, %R, %c, %F, %u, %x, %T, %f)

**update_received**
Update statistics after receiving message.
Default value:

**UPDATE** phones **SET** Received = Received + 1 **WHERE** IMEI = %I

**refresh_send_status**
Update messages in outbox.
Default value:

**UPDATE** outbox **SET** SendingTimeOut = (NOW() + INTERVAL locktime SECOND) + 0 **WHERE** ID = %1 **AND** (SendingTimeOut < NOW() **OR** SendingTimeOut IS NULL)

Query specific parameters:

%1 ID of message

**find_outbox_sms_id**
Find sms messages for sending.
Default value:

**SELECT** ID, InsertIntoDB, SendingDateTime, SenderID FROM outbox **WHERE** SendingDateTime < NOW() **AND** SendingTimeOut < NOW() **AND** SendBefore >= CURTIME() **AND** SendAfter <= CURTIME() **AND** (SenderID is NULL OR SenderID = '' OR SenderID = %P) **ORDER BY** InsertIntoDB **ASC LIMIT** %1

Query specific parameters:

%1 limit of sms messages sended in one walk in loop

**find_outbox_body**
Select body of message.
Default value:

**SELECT** Text, Coding, UDH, Class, TextDecoded, ID, DestinationNumber, MultiPart, RelativeValidity, DeliveryReport, CreatorID FROM outbox **WHERE** ID=%1

Query specific parameters:

%1 ID of message

**find_outbox_multipart**
Select remaining parts of sms message.
Default value:

**SELECT** Text, Coding, UDH, Class, TextDecoded, ID, SequencePosition FROM outbox_multipart **WHERE** ID=%1 **AND** SequencePosition=%2

Query specific parameters:

%1 ID of message
%2 Number of multipart message

**delete_outbox**
Remove messages from outbox after their successful send.

---

**6.2. SQL Service**
Default value:

```
DELETE FROM outbox WHERE ID=%1
```

Query specific parameters:

%1 ID of message

**delete_outbox_multipart**

Remove messages from outbox_multipart after their successful send.

Default value:

```
DELETE FROM outbox_multipart WHERE ID=%1
```

Query specific parameters:

%1 ID of message

**create_outbox**

Create message (insert to outbox).

Default value:

```
INSERT INTO outbox (CreatorID, SenderID, DeliveryReport, MultiPart, InsertIntoDB, Text, DestinationNumber, RelativeValidity, Coding, UDH, Class, TextDecoded) VALUES (%1, %P, %2, %3, NOW(), %E, %R, %V, %c, %u, %x, %T)
```

Query specific parameters:

%1 creator of message
%2 delivery status report - yes/default
%3 multipart - FALSE/TRUE
%4 Part (part number)
%5 ID of message

**create_outbox_multipart**

Create message remaining parts.

Default value:

```
INSERT INTO outbox_multipart (SequencePosition, Text, Coding, UDH, Class, TextDecoded, ID) VALUES (%4, %E, %c, %u, %x, %T, %5)
```

Query specific parameters:

%1 creator of message
%2 delivery status report - yes/default
%3 multipart - FALSE/TRUE
%4 Part (part number)
%5 ID of message

**add_sent_info**

Insert to sentitems.

Default value:
```
INSERT INTO sentitems (CreatorID, ID, SequencePosition, Status, SendingDateTime, SMSCNumber, TPMR, SenderID, Text, DestinationNumber, Coding, UDH, Class, TextDecoded, InsertIntoDB, RelativeValidity)
VALUES (%A, %1, %2, %3, NOW(), %F, %4, %P, %E, %R, %c, %u, %x, %T, %5, %V)
```

Query specific parameters:

- %1 ID of sms message
- %2 part number (for multipart sms)
- %3 message state (SendingError, Error, SendingOK, SendingOKNoReport)
- %4 message reference (TPMR)
- %5 time when inserted in db

**update_sent**

Update sent statistics after sending message.

Default value:

```
UPDATE phones SET Sent = Sent + 1 WHERE IMEI = %I
```

**refresh_phone_status**

Update phone status (battery, signal).

Default value:

```
UPDATE phones SET TimeOut = (NOW() + INTERVAL 10 SECOND) + 0,
Battery = %1, SignalStrength = %2 WHERE IMEI = %I
```

Query specific parameters:

- %1 battery percent
- %2 signal percent

### 6.3 MySQL Backend

MySQL backend stores all data in a MySQL database server, which parameters are defined by configuration (see SMSD Configuration File for description of configuration options).

For tables description see SMSD Database Structure.

This backend is based on SQL Service.

#### 6.3.1 Privileges

The user accessing the database does not need much privileges, the following privleges should be enough:

```
GRANT USAGE ON *.* TO 'smsd'@'localhost' IDENTIFIED BY 'password';

GRANT SELECT, INSERT, UPDATE, DELETE ON `smsd`.* TO 'smsd'@'localhost';
```

**Note:** For creating the SQL tables you need more privileges, especially for creating triggers, which are used for some functionality.
6.3.2 Example

SQL script for creating tables in MySQL database:

```sql
-- phpMyAdmin SQL Dump
-- version 2.8.0.3
-- http://www.phpmyadmin.net
--
-- Host: localhost
-- Generation Time: Jun 10, 2006 at 11:08 PM
-- Server version: 5.0.18
-- PHP Version: 5.1.3
--
-- Database: 'smsd'
--
-- Table structure for table 'daemons'

CREATE TABLE `daemons` (  
    `Start` text NOT NULL,  
    `Info` text NOT NULL  
) ENGINE=MyISAM DEFAULT CHARSET=utf8;

--
-- Dumping data for table 'daemons'
--

-- Table structure for table 'gammu'

CREATE TABLE `gammu` (  
    `Version` integer NOT NULL default '0'  
) ENGINE=MyISAM DEFAULT CHARSET=utf8;

--
-- Dumping data for table 'gammu'

INSERT INTO `gammu` (`Version`) VALUES (13);

-- Table structure for table 'inbox'

CREATE TABLE `inbox` (  
    `UpdatedInDB` timestamp NOT NULL default CURRENT_TIMESTAMP on update CURRENT_TIMESTAMP,  
    `ReceivingDateTime` timestamp NOT NULL default '0000-00-00 00:00:00',  
    `Text` text NOT NULL,  
    `SenderNumber` varchar(20) NOT NULL default '',  
) ENGINE=MyISAM DEFAULT CHARSET=utf8;
```
'Coding' enum('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression') NOT NULL,
'UDH' text NOT NULL,
'SMSCNumber' varchar(20) NOT NULL default '',
'Class' integer NOT NULL default '-1',
'TextDecoded' text NOT NULL default '',
'ID' integer unsigned NOT NULL auto_increment,
'RecipientID' text NOT NULL,
'Processed' enum('false','true') NOT NULL default 'false',
PRIMARY KEY 'ID' ('ID')
) ENGINE=MyISAM DEFAULT CHARSET=utf8 AUTO_INCREMENT=1 ;

--

-- Dumping data for table 'inbox'
--

-- --------------------------------------------------------

-- Table structure for table 'outbox'
--

CREATE TABLE 'outbox' (
 'UpdatedInDB' timestamp NOT NULL default CURRENT_TIMESTAMP on update CURRENT_TIMESTAMP,
 'InsertIntoDB' timestamp NOT NULL default '0000-00-00 00:00:00',
 'SendingDateTime' timestamp NOT NULL default '0000-00-00 00:00:00',
 'SendBefore' time NOT NULL DEFAULT '23:59:59',
 'SendAfter' time NOT NULL DEFAULT '00:00:00',
 'Text' text,
 'DestinationNumber' varchar(20) NOT NULL default '',
 'Coding' enum('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression') NOT NULL default 'Default_No_Compression',
 'UDH' text,
 'Class' integer default '-1',
 'TextDecoded' text NOT NULL default '',
 'ID' integer unsigned NOT NULL auto_increment,
 'MultiPart' enum('false','true') default 'false',
 'RelativeValidity' integer default '-1',
 'SenderId' varchar(255),
 'DeliveryTimeOut' timestamp NOT NULL default '0000-00-00 00:00:00',
 'DeliveryReport' enum('default','yes','no') default 'default',
 'CreatorID' text NOT NULL,
 PRIMARY KEY 'ID' ('ID')
) ENGINE=MyISAM DEFAULT CHARSET=utf8;

CREATE INDEX outbox_date ON outbox(SendingDateTime, SendingTimeOut);
CREATE INDEX outbox_sender ON outbox(SenderID);

--

-- Dumping data for table 'outbox'
--

-- --------------------------------------------------------

-- Table structure for table 'outbox_multipart'
--

6.3. MySQL Backend
CREATE TABLE 'outbox_multipart' (  
'ID' integer unsigned NOT NULL default '0',
'SequencePosition' integer NOT NULL default '1',
PRIMARY KEY ('ID', 'SequencePosition')
) ENGINE=MyISAM DEFAULT CHARSET=utf8;

-- Dumping data for table 'outbox_multipart'

-- --------------------------------------------------------

CREATE TABLE 'pbk' (  
'GroupID' integer NOT NULL default '-1',
'Name' text NOT NULL,
'Number' text NOT NULL,
PRIMARY KEY ('ID')
) ENGINE=MyISAM DEFAULT CHARSET=utf8;

-- Dumping data for table 'pbk'

-- --------------------------------------------------------

CREATE TABLE 'pbk_groups' (  
'Name' text NOT NULL,
'ID' integer NOT NULL auto_increment,
PRIMARY KEY 'ID' ('ID')
) ENGINE=MyISAM DEFAULT CHARSET=utf8 AUTO_INCREMENT=1;

-- Dumping data for table 'pbk_groups'

-- --------------------------------------------------------

CREATE TABLE 'phones' (  
'ID' integer NOT NULL auto_increment, 
PRIMARY KEY 'ID' ('ID') 
) ENGINE=MyISAM DEFAULT CHARSET=utf8 AUTO_INCREMENT=1;
CREATE TABLE `phones` (
  `ID` text NOT NULL,
  `UpdatedInDB` timestamp NOT NULL default CURRENT_TIMESTAMP on update CURRENT_TIMESTAMP,
  `InsertIntoDB` timestamp NOT NULL default '0000-00-00 00:00:00',
  `Timeout` timestamp NOT NULL default '0000-00-00 00:00:00',
  `Send` enum('yes','no') NOT NULL default 'no',
  `Receive` enum('yes','no') NOT NULL default 'no',
  `IMEI` varchar(35) NOT NULL,
  `Client` text NOT NULL,
  `Battery` integer NOT NULL DEFAULT -1,
  `Signal` integer NOT NULL DEFAULT -1,
  `Sent` int NOT NULL DEFAULT 0,
  `Received` int NOT NULL DEFAULT 0,
  PRIMARY KEY (`IMEI`) ) ENGINE=MyISAM DEFAULT CHARSET=utf8;

-- Dumping data for table `phones`

-- Table structure for table `sentitems` 

CREATE TABLE `sentitems` (
  `UpdatedInDB` timestamp NOT NULL default CURRENT_TIMESTAMP on update CURRENT_TIMESTAMP,
  `InsertIntoDB` timestamp NOT NULL default '0000-00-00 00:00:00',
  `SendingDateTime` timestamp NOT NULL default '0000-00-00 00:00:00',
  `DeliveryDateTime` timestamp NULL,
  `Text` text NOT NULL,
  `DestinationNumber` varchar(20) NOT NULL default '',
  `Coding` enum('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression') NOT NULL default 'Default_No_Compression',
  `UDH` text NOT NULL,
  `SMSCNumber` varchar(20) NOT NULL default '',
  `Class` integer NOT NULL default '-1',
  `TextDecoded` text NOT NULL default '',
  `ID` integer unsigned NOT NULL default '0',
  `SenderId` varchar(255) NOT NULL,
  `SequencePosition` integer NOT NULL default '1',
  `Status` enum('SendingOK','SendingOKNoReport','SendingError','DeliveryOK','DeliveryFailed','DeliveryPending','DeliveryUnknown') NOT NULL default 'SendingOK',
  `StatusError` integer NOT NULL default '-1',
  `TPMR` integer NOT NULL default '-1',
  `RelativeValidity` integer NOT NULL default '-1',
  `CreatorID` text NOT NULL,
  PRIMARY KEY (`ID`, `SequencePosition`) ) ENGINE=MyISAM DEFAULT CHARSET=utf8;

CREATE INDEX sentitems_date ON sentitems(DeliveryDateTime);
CREATE INDEX sentitems_tpmr ON sentitems(TPMR);
CREATE INDEX sentitems_dest ON sentitems(DestinationNumber);
CREATE INDEX sentitems_sender ON sentitems(SenderID);

-- Dumping data for table `sentitems`
-- Triggers for setting default timestamps
--

DELIMITER //

CREATE TRIGGER inbox_timestamp BEFORE INSERT ON inbox
FOR EACH ROW
BEGIN
  IF NEW.ReceivingDateTime = '0000-00-00 00:00:00' THEN
    SET NEW.ReceivingDateTime = CURRENT_TIMESTAMP();
  END IF;
END;//

CREATE TRIGGER outbox_timestamp BEFORE INSERT ON outbox
FOR EACH ROW
BEGIN
  IF NEW.InsertIntoDB = '0000-00-00 00:00:00' THEN
    SET NEW.InsertIntoDB = CURRENT_TIMESTAMP();
  END IF;
  IF NEW.SendingDateTime = '0000-00-00 00:00:00' THEN
    SET NEW.SendingDateTime = CURRENT_TIMESTAMP();
  END IF;
  IF NEW.SendingTimeOut = '0000-00-00 00:00:00' THEN
    SET NEW.SendingTimeOut = CURRENT_TIMESTAMP();
  END IF;
END;//

CREATE TRIGGER phones_timestamp BEFORE INSERT ON phones
FOR EACH ROW
BEGIN
  IF NEW.InsertIntoDB = '0000-00-00 00:00:00' THEN
    SET NEW.InsertIntoDB = CURRENT_TIMESTAMP();
  END IF;
  IF NEW.TimeOut = '0000-00-00 00:00:00' THEN
    SET NEW.TimeOut = CURRENT_TIMESTAMP();
  END IF;
END;//

CREATE TRIGGER sentitems_timestamp BEFORE INSERT ON sentitems
FOR EACH ROW
BEGIN
  IF NEW.InsertIntoDB = '0000-00-00 00:00:00' THEN
    SET NEW.InsertIntoDB = CURRENT_TIMESTAMP();
  END IF;
  IF NEW.SendingDateTime = '0000-00-00 00:00:00' THEN
    SET NEW.SendingDateTime = CURRENT_TIMESTAMP();
  END IF;
END;//

DELIMITER ;

Note: You can find the script in docs/sql/mysql.sql as well.
6.4 PostgreSQL Backend

PGSQL backend stores all data in a PostgreSQL database server, which parameters are defined by configuration (see SMSD Configuration File for description of configuration options).

For tables description see SMSD Database Structure.

This backend is based on SQL Service.

6.4.1 Example

SQL script for creating tables in PostgreSQL database:

```
--
-- Database: "smsd"
--
-- CREATE USER "smsd" WITH NOCREATEDB NOCREATEUSER;
-- CREATE DATABASE "smsd" WITH OWNER = "smsd" ENCODING = 'UTF8';
-- \connect "smsd" "smsd"
-- COMMENT ON DATABASE "smsd" IS 'Gammu SMSD Database';

-- --------------------------------------------------------
--
-- Function declaration for updating timestamps
--
CREATE LANGUAGE plpgsql;
CREATE OR REPLACE FUNCTION update_timestamp() RETURNS trigger AS $update_timestamp$
BEGIN
    NEW."UpdatedInDB" := LOCALTIMESTAMP(0);
    RETURN NEW;
END;
$update_timestamp$ LANGUAGE plpgsql;

-- --------------------------------------------------------
--
-- Sequence declarations for tables' primary keys
--
--CREATE SEQUENCE inbox_ID_seq;
--CREATE SEQUENCE outbox_ID_seq;
--CREATE SEQUENCE outbox_multipart_ID_seq;
--CREATE SEQUENCE pbk_groups_ID_seq;
--CREATE SEQUENCE sentitems_ID_seq;

-- --------------------------------------------------------
--
-- Index declarations for tables' primary keys
--
--CREATE UNIQUE INDEX inbox_pkey ON inbox USING btree ("ID");
```
CREATE TRIGGER update_timestamp BEFORE UPDATE ON inbox FOR EACH ROW EXECUTE PROCEDURE update_timestamp();

CREATE INDEX outbox_date ON outbox("SendingDateTime", "SendingTimeOut");
CREATE INDEX outbox_sender ON outbox("SenderID");

CREATE INDEX outbox_message ON outbox("Message");
CREATE TRIGGER update_timestamp BEFORE UPDATE ON outbox FOR EACH ROW EXECUTE PROCEDURE update_timestamp();

-- Table structure for table "outbox_multipart"

CREATE TABLE outbox_multipart (
   "Text" text,
   "Coding" varchar(255) NOT NULL DEFAULT 'Default_No_Compression',
   "UDH" text,
   "Class" integer DEFAULT '-1',
   "TextDecoded" text DEFAULT NULL,
   "ID" serial,
   "SequencePosition" integer NOT NULL DEFAULT '1',
   PRIMARY KEY ("ID", "SequencePosition"),
   CHECK ("Coding" IN ('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression'))
);

-- Dumping data for table "outbox_multipart"

-- Table structure for table "pbk"

CREATE TABLE pbk (   "ID" serial PRIMARY KEY,
   "GroupID" integer NOT NULL DEFAULT '-1',
   "Name" text NOT NULL,
   "Number" text NOT NULL
);

-- Dumping data for table "pbk"

-- Table structure for table "pbk_groups"

CREATE TABLE pbk_groups (   "Name" text NOT NULL,
   "ID" serial PRIMARY KEY
);

-- Dumping data for table "pbk_groups"
-- Table structure for table "phones"

CREATE TABLE phones {
  "ID" text NOT NULL,
  "UpdatedInDB" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "InsertedIntoDB" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "Timeout" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "Send" boolean NOT NULL DEFAULT 'no',
  "Receive" boolean NOT NULL DEFAULT 'no',
  "IMEI" varchar(35) PRIMARY KEY NOT NULL,
  "Client" text NOT NULL,
  "Battery" integer NOT NULL DEFAULT -1,
  "Signal" integer NOT NULL DEFAULT -1,
  "Sent" integer NOT NULL DEFAULT 0,
  "Received" integer NOT NULL DEFAULT 0
};

-- Dumping data for table "phones"

-- Create trigger for table "phones"

CREATE TRIGGER update_timestamp BEFORE UPDATE ON phones FOR EACH ROW EXECUTE PROCEDURE update_timestamp();

-- Table structure for table "sentitems"

CREATE TABLE sentitems {
  "UpdatedInDB" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "InsertedIntoDB" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "SendingDateTime" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "DeliveryDateTime" timestamp(0) WITHOUT time zone NOT NULL DEFAULT LOCALTIMESTAMP(0),
  "Text" text NOT NULL,
  "DestinationNumber" varchar(20) NOT NULL DEFAULT '',
  "Coding" varchar(255) NOT NULL DEFAULT 'Default_No_Compression',
  "UDH" text NOT NULL,
  "SMSCNumber" varchar(20) NOT NULL DEFAULT '',
  "Class" integer NOT NULL DEFAULT '-1',
  "TextDecoded" text NOT NULL DEFAULT '',
  "ID" serial,
  "SenderId" varchar(255) NOT NULL,
  "SequencePosition" integer NOT NULL DEFAULT '1',
  "Status" varchar(255) NOT NULL DEFAULT 'SendingOK',
  "StatusError" integer NOT NULL DEFAULT '-1',
  "TPMR" integer NOT NULL DEFAULT '-1',
"RelativeValidity" integer NOT NULL DEFAULT '-1',
"CreatorID" text NOT NULL,
CHECK ("Status" IN
  ('SendingOK','SendingOKNoReport','SendingError','DeliveryOK','DeliveryFailed','DeliveryPending',
   'DeliveryUnknown','Error')),
CHECK ("Coding" IN
  ('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression'))
)
);

CREATE INDEX sentitems_date ON sentitems("DeliveryDateTime");
CREATE INDEX sentitems_tpmr ON sentitems("TPMR");
CREATE INDEX sentitems_dest ON sentitems("DestinationNumber");
CREATE INDEX sentitems_sender ON sentitems("SenderID");

--
-- Dumping data for table "sentitems"
--
-- --------------------------------------------------------
--
-- Create trigger for table "sentitems"
--

CREATE TRIGGER update_timestamp BEFORE UPDATE ON sentitems FOR EACH ROW EXECUTE PROCEDURE update_timestamp();

Note: You can find the script in docs/sql/pgsql.sql as well.

6.5 DBI Backend

DBI backend stores all data in any database supported by libdbi, which parameters are defined by configuration (see SMSD Configuration File for description of configuration options).

For tables description see SMSD Database Structure.

This backend is based on SQL Service.

Note: The DBI driver is currently not supported on Windows because libdbi library does not support this platform.

6.5.1 Supported drivers

For complete list of drivers for libdbi see libdbi-drivers project. The drivers for example include:

- sqlite3 · for SQLite 3
- mysql · for MySQL
- psql · for PostgreSQL
- freetds · for MS SQL Server or Sybase
6.5.2 Example

SQL script for creating tables in SQLite database:

```sql
CREATE TABLE daemons {
    Start TEXT NOT NULL,
    Info TEXT NOT NULL
};

CREATE TABLE gammu {
    Version INTEGER NOT NULL DEFAULT '0'
};

INSERT INTO gammu (Version) VALUES (13);

CREATE TABLE inbox {
    UpdatedInDB NUMERIC NOT NULL DEFAULT (datetime('now')),
    ReceivingDateTime NUMERIC NOT NULL DEFAULT (datetime('now')),
    Text TEXT NOT NULL,
    SenderNumber TEXT NOT NULL DEFAULT '','
    Coding TEXT NOT NULL DEFAULT 'Default_No_Compression',
    UDH TEXT NOT NULL,
    SMSCNumber TEXT NOT NULL DEFAULT '','
    Class INTEGER NOT NULL DEFAULT '-1',
    TextDecoded TEXT NOT NULL DEFAULT '','
    ID INTEGER PRIMARY KEY AUTOINCREMENT,
    RecipientID TEXT NOT NULL,
    Processed TEXT NOT NULL DEFAULT 'false',
    CHECK (Coding IN ('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression'))
};

CREATE TRIGGER update_inbox_time UPDATE ON inbox
    BEGIN
        UPDATE inbox SET UpdatedInDB = datetime('now') WHERE ID = old.ID;
    END;

CREATE TABLE outbox {
    UpdatedInDB NUMERIC NOT NULL DEFAULT (datetime('now')),
    InsertIntoDB NUMERIC NOT NULL DEFAULT (datetime('now')),
    SendingDateTime NUMERIC NOT NULL DEFAULT (datetime('now')),
    SendBefore time NOT NULL DEFAULT '23:59:59',
    SendAfter time NOT NULL DEFAULT '00:00:00',
    Text TEXT,
    DestinationNumber TEXT NOT NULL DEFAULT '','
    Coding TEXT NOT NULL DEFAULT 'Default_No_Compression',
    UDH TEXT,
    Class INTEGER DEFAULT '-1',
    TextDecoded TEXT NOT NULL DEFAULT '','
    ID INTEGER PRIMARY KEY AUTOINCREMENT,
    MultiPart TEXT NOT NULL DEFAULT 'false',
    RelativeValidity INTEGER DEFAULT '-1',
    SenderID TEXT,
    SendingTimeOut NUMERIC NOT NULL DEFAULT (datetime('now')),
    DeliveryReport TEXT DEFAULT 'default',
    CreatorID TEXT NOT NULL,
    CHECK (Coding IN ('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression'))
    CHECK (DeliveryReport IN ('default','yes','no'))
};
```
CREATE INDEX outbox_date ON outbox(SendingDateTime, SendingTimeOut);
CREATE INDEX outbox_sender ON outbox(SenderID);

CREATE TRIGGER update_outbox_time UPDATE ON outbox
BEGIN
    UPDATE outbox SET UpdatedInDB = datetime('now') WHERE ID = old.ID;
END;

CREATE TABLE outbox_multipart (
    Text TEXT,
    Coding TEXT NOT NULL DEFAULT 'Default_No_Compression',
    UDH TEXT,
    Class INTEGER DEFAULT '-1',
    TextDecoded TEXT DEFAULT NULL,
    ID INTEGER,
    SequencePosition INTEGER NOT NULL DEFAULT '1',
    CHECK (Coding IN ('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression'))
    PRIMARY KEY (ID, SequencePosition)
);

CREATE TABLE pbk {
    ID INTEGER PRIMARY KEY AUTOINCREMENT,
    GroupID INTEGER NOT NULL DEFAULT '-1',
    Name TEXT NOT NULL,
    Number TEXT NOT NULL
};

CREATE TABLE pbk_groups {
    Name TEXT NOT NULL,
    ID INTEGER PRIMARY KEY AUTOINCREMENT
};

CREATE TABLE phones (
    ID TEXT NOT NULL,
    UpdatedInDB NUMERIC NOT NULL DEFAULT (datetime('now')),
    InsertIntoDB NUMERIC NOT NULL DEFAULT (datetime('now')),
    TimeOut NUMERIC NOT NULL DEFAULT (datetime('now')),
    Send TEXT NOT NULL DEFAULT 'no',
    Receive TEXT NOT NULL DEFAULT 'no',
    IMEI TEXT PRIMARY KEY NOT NULL,
    Client TEXT NOT NULL,
    Battery INTEGER NOT NULL DEFAULT -1,
    Signal INTEGER NOT NULL DEFAULT -1,
    Sent INTEGER NOT NULL DEFAULT 0,
    Received INTEGER NOT NULL DEFAULT 0
};

CREATE TRIGGER update_phones_time UPDATE ON phones
BEGIN
    UPDATE phones SET UpdatedInDB = datetime('now') WHERE IMEI = old.IMEI;
END;

CREATE TABLE sentitems {
    UpdatedInDB NUMERIC NOT NULL DEFAULT (datetime('now')),
    InsertIntoDB NUMERIC NOT NULL DEFAULT (datetime('now')),
SendingDateTime NUMERIC NOT NULL DEFAULT (datetime('now')),
DeliveryDateTime NUMERIC NULL,
Text TEXT NOT NULL,
DestinationNumber TEXT NOT NULL DEFAULT '',
Coding TEXT NOT NULL DEFAULT 'Default_No_Compression',
UDH TEXT NOT NULL,
SMSCNumber TEXT NOT NULL DEFAULT '',
Class INTEGER NOT NULL DEFAULT '-1',
TextDecoded TEXT NOT NULL DEFAULT '',
ID INTEGER,
SenderId TEXT NOT NULL,
SequencePosition INTEGER NOT NULL DEFAULT '1',
Status TEXT NOT NULL DEFAULT 'SendingOK',
StatusError INTEGER NOT NULL DEFAULT '-1',
TPMR INTEGER NOT NULL DEFAULT '-1',
RelativeValidity INTEGER NOT NULL DEFAULT '-1',
CreatorID TEXT NOT NULL,
CHECK (Status IN ('SendingOK','SendingOKNoReport','SendingError','DeliveryOK','DeliveryFailed','DeliveryPending', 'DeliveryUnknown','Error')),
CHECK (Coding IN ('Default_No_Compression','Unicode_No_Compression','8bit','Default_Compression','Unicode_Compression'))
PRIMARY KEY (ID, SequencePosition)
};

CREATE INDEX sentitems_date ON sentitems(DeliveryDateTime);
CREATE INDEX sentitems_tpmr ON sentitems(TPMR);
CREATE INDEX sentitems_dest ON sentitems(DestinationNumber);
CREATE INDEX sentitems_sender ON sentitems(SenderID);

CREATE TRIGGER update_sentitems_time UPDATE ON sentitems
BEGIN
    UPDATE sentitems SET UpdatedInDB = datetime('now') WHERE ID = old.ID;
END;

Note: You can find the script in docs/sql/sqlite.sql as well. There are also scripts for other databases in same folder.

6.6 ODBC Backend

New in version 1.29.92. ODBC backend stores all data in any database supported by ODBC, which parameters are defined by configuration (see SMSD Configuration File for description of configuration options).

For tables description see SMSD Database Structure.
This backend is based on SQL Service.

6.6.1 Supported drivers

On Microsoft Windows, Gammu uses native ODBC, on other platforms, unixODBC can be used.
6.6.2 Limitations

Due to limits of the ODBC interface, you might have to tweak SQL queries to work in used SQL server, see *SQL Queries* for more details.

Partially this can be configured using SQL.

6.6.3 Configuration

You specify data source name (DSN) as Host in *SMSD Configuration File*. The data source is configured depending on your platform.

On Microsoft Windows, you can find instructions on Microsoft website: [http://support.microsoft.com/kb/305599](http://support.microsoft.com/kb/305599)


6.6.4 Example

Example configuration:

```ini
[smsd]
service = sql
driver = odbc
host = dsn_of_your_database
sql = sql_variant_to_use
user = username
password = password
```

6.7 Null Backend

NULL backend does not store data at all. It could be useful in case you don’t want to store messages at all and you want to process them in

`RunOnReceive` handler.

6.8 SMSD Database Structure

The backends themselves are described in their sections, this document describes general database structure and required tables.

More SMS daemons can share single database. If you do not specify PhoneID in their configuration, all are treated equally and you have no guarantee which one sends outgoing message. If you configure PhoneID and use it when inserting message to the `outbox` table (`gammu-smsd-inject` does this), each SMS daemon will have separate outbox queue.

6.8.1 Receiving of messages

Received messages are stored in `inbox` table.
6.8.2 Transmitting of messages

Transmitted messages are read from table `outbox` and possible subsequent parts of the same message from `outbox_multipart`.

6.8.3 Description of tables

**daemons**

Information about running daemons.

**gammu**

Table holding single field `Version` - version of a database schema. See *History of database structure* for details what has changed.

**inbox**

Table where received messages will be stored.

Fields description:

- **UpdatedInDB (timestamp)** when somebody (daemon, user, etc.) updated it
- **ReceivingDateTime (timestamp)** when SMS was received
- **Text (text)** encoded SMS text (for all SMS)
- **SenderNumber (varchar(20))** decoded SMS sender number
- **Coding (enum('Default_No_Compression', 'Unicode_No_Compression', '8bit', 'Default_Compression', 'Unicode_Compression'))** SMS text coding
- **UDH (text)** encoded User Data Header text
- **SMSCNumber (varchar(20))** decoded SMSC number
- **Class (integer)** SMS class or -1 (0 is flash SMS, 1 is normal one)
- **TextDecoded (varchar(160))** decoded SMS text (for Default Alphabet/Unicode SMS)
- **ID (integer unsigned)** SMS identificator (for using with external applications)
- **RecipientID (text)** which Gammu daemon has added it
- **Processed (enum('false', 'true'))** you can use for marking, whether SMS was processed or not

**outbox**

Messages enqueued for sending should be placed in this table. If message is multipart, subsequent parts are stored in table `outbox_multipart`.

Fields description:

- **UpdatedInDB (timestamp)** when somebody (daemon, user, etc.) updated it
- **InsertIntoDB (timestamp)** when message was inserted into database
- **SendingDateTime (timestamp)** set it to some value, when want to force sending after some planned time
SendBefore (time)  Send message before specified time, can be used to limit messages from being sent in night.  Default value is 23:59:59 New in version 1.29.90.

SendAfter (time)  Send message after specified time, can be used to limit messages from being sent in night.  Default value is 00:00:00 New in version 1.29.90.

Text (text)  SMS text encoded using hex values in proper coding. If you want to use TextDecoded field, keep this NULL (or empty).

DestinationNumber (varchar(20))  recipient number

Coding (enum('Default_No_Compression', 'Unicode_No_Compression', '8bit', 'Default_Compression', 'Unicode_Compression'))  SMS text coding

UDH (text)  User Data Header encoded using hex values which will be used for constructing the message. Without this, message will be sent as plain text.

Class (integer)  SMS class or -1 (0 is normal SMS, 1 is flash one)

TextDecoded (varchar(160))  SMS text in “human readable” form

ID (integer unsigned)  SMS/SMS sequence ID

Please note that this number has to be unique also for sentitems table, so reusing message IDs might not be a good idea.

Multipart (enum('false','true'))  info, whether there are more SMS from this sequence in outbox_multipart

RelativeValidity (integer)  SMS relative validity like encoded using GSM specs

SenderId (text)  which SMSD instance should send this one sequence, see PhoneID

SendingTimeOut (timestamp)  used by SMSD instance for own targets

DeliveryReport (enum('default','yes','no'))  when default is used, Delivery Report is used or not according to SMSD instance settings; yes forces Delivery Report.

CreatorID (text)  sender identification, it has to match PhoneID in SMSD configuration to make SMSD process this message

outbox_multipart

Data for outgoing multipart messages.

Fields description:

ID (integer unsigned)  the same meaning as values in outbox table

Text (text)  the same meaning as values in outbox table

Coding (enum('Default_No_Compression', 'Unicode_No_Compression', '8bit', 'Default_Compression', 'Unicode_Compression'))  the same meaning as values in outbox table

UDH (text)  the same meaning as values in outbox table

Class (integer)  the same meaning as values in outbox table

TextDecoded (varchar(160))  the same meaning as values in outbox table

ID (integer unsigned)  the same meaning as values in outbox table

SequencePosition (integer)  info, what is SMS number in SMS sequence (start at 2, first part is in outbox table).
phones

Information about connected phones. This table is periodically refreshed and you can get information such as battery or signal level from here.

Fields description:

**ID** (text) PhoneID value

**UpdatedInDB** (timestamp) when this record has been updated

**InsertIntoDB** (timestamp) when this record has been created (when phone has been connected)

**TimeOut** (timestamp) when this record expires

**Send** (boolean) indicates whether SMSD is sending messages, depends on configuration directive `Send`

**Receive** (boolean) indicates whether SMSD is receiving messages, depends on configuration directive `Receive`

**IMEI** (text) IMEI of phone

**Client** (text) client name, usually string Gammu with version

**Battery** (integer) battery level in percent (or -1 if unknown)

**Signal** (integer) signal level in percent (or -1 if unknown)

**Sent** (integer) Number of sent SMS messages (SMSD does not reset this counter, so it might overflow).

**Received** (integer) Number of received SMS messages (SMSD does not reset this counter, so it might overflow).

sentitems

Log of sent messages (and unsent ones with error code). Also if delivery reports are enabled, message state is updated after receiving delivery report.

Fields description:

**UpdatedInDB** (timestamp) when somebody (daemon, user, etc.) updated it

**InsertIntoDB** (timestamp) when message was inserted into database

**SendingDateTime** (timestamp) when message has been sent

**DeliveryDateTime** (timestamp) Time of receiving delivery report (if it has been enabled).

**Status** (enum('SendingOK', 'SendingOKNoReport', 'SendingError', 'DeliveryOK', 'DeliveryFailed', 'DeliveryPending', 'DeliveryUnknown', 'Error')) Status of message sending. SendingError mens that phone failed to send the message, Error indicates some other error while processing message.

- **SendingOK** Message has been sent, waiting for delivery report.
- **SendingOKNoReport** Message has been sent without asking for delivery report.
- **SendingError** Sending has failed.
- **DeliveryOK** Delivery report arrived and reported success.
- **DeliveryFailed** Delivery report arrived and reports failure.
- **DeliveryPending** Delivery report announced pending deliver.
- **DeliveryUnknown** Delivery report reported unknown status.
- **Error** Some other error happened during sending (usually bug in SMSD).
**StatusError (integer)** Status of delivery from delivery report message, codes are defined in GSM specification 03.40 section 9.2.3.15 (TP-Status).

**Text (text)** SMS text encoded using hex values

**DestinationNumber (varchar(20))** decoded destination number for SMS

**Coding (enum(‘Default_No_Compression’, ‘Unicode_No_Compression’, ‘8bit’, ‘Default_Compression’, ‘Unicode_Compression’))** SMS text coding

**UDH (text)** User Data Header encoded using hex values

**SMSCNumber (varchar(20))** decoded number of SMSC, which sent SMS

**Class (integer)** SMS class or -1 (0 is normal SMS, 1 is flash one)

**TextDecoded (varchar(160))** SMS text in “human readable” form

**ID (integer unsigned)** SMS ID

**SenderId (text)** which SMSD instance sent this one sequence, see PhoneID

**SequencePosition (integer)** SMS number in SMS sequence

**TPMR (integer)** Message Reference like in GSM specs

**RelativeValidity (integer)** SMS relative validity like encoded using GSM specs

**CreatorID (text)** copied from CreatorID from outbox table, matches PhoneID

**pbk**

Not used by SMSD currently, included only for application usage.

**pbk_groups**

Not used by SMSD currently, included only for application usage.

### 6.8.4 History of database structure

History of schema versions:

13 Added SendBefore and SendAfter fields. Changed in version 1.29.90.

12 the changes only affect MySQL structure changing default values for timestamps from 0000-00-00 00:00:00 to CURRENT_TIMESTAMP() by using triggers, to update to this version, just execute triggers definition at the end of SQL file. Changed in version 1.28.94.

11 all fields for storing message text are no longer limited to 160 chars, but are arbitrary length text fields. Changed in version 1.25.92.

10 DeliveryDateTime is now NULL when message is not delivered, added several indexes Changed in version 1.22.95.

9 added sent/received counters to phones table Changed in version 1.22.93.

8 Signal and battery state are now stored in database. Changed in version 1.20.94.

7 Added CreatorID to several tables. Changed in version 1.07.00.

6 Many fields in outbox can now be NULL. Changed in version 1.06.00.

5 Introduced daemons table and various other changes. Changed in version 1.03.00.
3 Introduced phones table and various other changes. Changed in version 0.98.0.

6.8.5 Examples

Creating tables

SQL scripts to create all needed tables for most databases are included in Gammu documentation (docs/sql). As well as some PHP scripts interacting with the database.

For example to create SQLite tables, issue following command:

```
sqlite3 smsd.db < docs/sql/sqlite.sql
```

Injecting a message using SQL

To send a message, you can either use `gammu-smsd-inject`, which does all the magic for you, or you can insert the message manually. The simplest example is short text message:

```
INSERT INTO outbox (DestinationNumber, TextDecoded, CreatorID, Coding)
VALUES ('800123465', 'This is a SQL test message', 'Program', 'Default_No_Compression');
```

Please note usage of `TextDecoded` field, for `Text` field, you would have to hex encode the unicode text:

```
INSERT INTO outbox (DestinationNumber, Text, CreatorID, Coding)
VALUES ('800123465', '005400680069007300200069007300200061002000530051004c002000740065007300740020006d006500730073006100670065', 'Program', 'Default_No_Compression');
```

Injecting long message using SQL

Inserting multipart messages is a bit more tricky, you need to construct also UDH header and store it hexadecimally written into UDH field. Unless you have a good reason to do this manually, use `gammu-smsd-inject`.

For long text message, the UDH starts with `050003` followed by byte as a message reference (you can put anything there, but it should be different for each message, `D3` in following example), byte for number of messages (`02` in example, it should be unique for each message you send to same phone number) and byte for number of current message (`01` for first message, `02` for second, etc.).

For example long text message of two parts could look like following:
INSERT INTO outbox (CreatorID, MultiPart, DestinationNumber, UDH, TextDecoded, Coding)
VALUES ('Gammu 1.23.91', 'true', '123456', '050003D30201', 'Mququirip ya konej eqniu rejropcejor hugiyygdewl tfej nrupxujob xuemymiyliralj. Te tvyjuh qaxumru jyqiygqesykl kya jdytbez', 'Default_No_Compression')

INSERT INTO outbox_multipart (SequencePosition, UDH, Class, TextDecoded, ID, Coding)
VALUES (2, '050003D30202', 'u xewz qisubevumxyzk ufylehyzc. Nse xobq dfolizygqysj t bvowsyhyhemim ovutpapeempye giuwbib.', <ID_OF_INSERTED_RECORD_IN_OUBOX_TABLE>, 'Default_No_Compression')

Note: Adding UDH means that you have less space for text, in above example you can use only 153 characters in single message.
7.1 Backend services

The backend service is responsible for storing received messages and giving the SMSD core messages to send. It is solely up to them how the message will be stored, for example currently Gammu includes backends to store messages on filesystem (Files backend), various databases (MySQL Backend, PostgreSQL Backend, DBI Backend) or backend which does not store anything at all (Null Backend).

7.1.1 Backend interface

Each backend service needs to support several operations, which are exported in GSM_SMSDService structure:

GSM_Error GSM_SMSDService::Init (GSM_SMSDConfig *Config)
Initializes internal state, connect to backend storage.

Parameters
• Config – Pointer to SMSD configuration data

Returns Error code.

GSM_Error GSM_SMSDService::Free (GSM_SMSDConfig *Config)
Freeing internal data, disconnect from backend storage.

Parameters
• Config – Pointer to SMSD configuration data

Returns Error code.

GSM_Error GSM_SMSDService::InitAfterConnect (GSM_SMSDConfig *Config)
Optional hook called after SMSD is connected to phone, can be used for storing information about phone in backend.

Parameters
• Config – Pointer to SMSD configuration data

Returns Error code.

GSM_Error GSM_SMSDService::SaveInboxSMS (GSM_MultiSMSMessage *sms, GSM_SMSDConfig *Config, char **Locations)
Saves message into inbox.

Parameters
• sms – Message data to save
• **Config** – Pointer to SMSD configuration data

• **Locations** – Newly allocation pointer to string with IDs identifying saved messages.

** Returns ** Error code.

GSM_Error GSM_SMSDService::FindOutboxSMS (GSM_MultiSMSMessage *sms, GSM_SMSDConfig *Config, char *ID)

Finds message in outbox suitable for sending.

** Parameters **

• **sms** – Found outbox message will be stored here

• **Config** – Pointer to SMSD configuration data

• **ID** – Identification of found message will be stored here, this should be unique for different message, so that repeated attempts to send same message can be detected by SMSD core. Empty string avoids this check.

** Returns ** Error code.

GSM_Error GSM_SMSDService::MoveSMS (GSM_MultiSMSMessage *sms, GSM_SMSDConfig *Config, char *ID, gboolean alwaysDelete, gboolean sent)

Moves sent message from outbox to sent items.

** Parameters **

• **sms** – Message which should be moved, backend usually can get it by ID as well.

• **Config** – Pointer to SMSD configuration data.

• **ID** – Identification of message to be moved.

• **alwaysDelete** – Whether to delete message from outbox even if moving fails.

• **sent** – Whether message was sent (TRUE) or there was a failure (FALSE).

** Returns ** Error code.

GSM_Error GSM_SMSDService::CreateOutboxSMS (GSM_MultiSMSMessage *sms, GSM_SMSDConfig *Config, char *NewID)

Saves message into outbox queue.

** Parameters **

• **sms** – Message data to save

• **Config** – Pointer to SMSD configuration data

• **NewID** – ID of created message will be stored here.

** Returns ** Error code.

GSM_Error GSM_SMSDService::AddSentSMSInfo (GSM_MultiSMSMessage *sms, GSM_SMSDConfig *Config, char *ID, int Part, GSM_SMSDSendingError err, int TPMR)

Logs information about sent message (eg. delivery report).

** Parameters **

• **sms** – Message which should be moved, backend usually can get it by ID as well.

• **Config** – Pointer to SMSD configuration data

• **ID** – Identification of message to be marked.

• **Part** – Part of the message which is being processed.
• **err** – Status of sending message.
• **TPMR** – Message reference if available (*TPMR*).

Returns Error code.

GSM_Error GSM_SMSDService::RefreshSendStatus (GSM_SMSDConfig *Config, char *ID)
Updates sending status in service backend.

Parameters
• **Config** – Pointer to SMSD configuration data
• **ID** – Identification of message to be marked.

Returns Error code.

GSM_Error GSM_SMSDService::RefreshPhoneStatus (GSM_SMSDConfig *Config)
Updates information about phone in database (network status, battery, etc.).

Parameters
• **Config** – Pointer to SMSD configuration data

Returns Error code.

GSM_Error GSM_SMSDService::ReadConfiguration (GSM_SMSDConfig *Config)
Reads configuration specific for this backend.

Parameters
• **Config** – Pointer to SMSD configuration data

Returns Error code.

### 7.1.2 Message ID

You might have noticed that message ID is often used in the API. The primary reason for this is that it is usually easier for backend to handle message just by its internal identification instead of handling message data from GSM_MultiSMSMessage.

If the backend does not use any IDs internally, it really does not have to provide them, with only exception of GSM_SMSDService::FindOutboxSMS(), where ID is used for detection of repeated sending of same message.

The lifetime of ID for sent message:

• GSM_SMSDService::CreateOutboxSMS() or direct manipulation with backend storage creates new ID
• GSM_SMSDService::FindOutboxSMS() returns ID of message to process
• GSM_SMSDService::AddSentSMSInfo() and GSM_SMSDService::RefreshSendStatus() are then notified using this ID about sending of the message
• GSM_SMSDService::MoveSMS() then moves the message based on ID to sent items

The lifetime of ID for incoming messages:

• GSM_SMSDService::SaveInboxSMS() generates the message
• **RunOnReceive Directive** uses this ID
7.2 Message Sending Workflow

![Message Sending Workflow Diagram]

7.3 Message Receiving Workflow

![Message Receiving Workflow Diagram]
### Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-C, –csv</td>
<td>gammu-smsd-monitor command line option, 9</td>
</tr>
<tr>
<td>-G</td>
<td>gammu-smsd command line option, 5</td>
</tr>
<tr>
<td>-S, run-service</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-U, user</td>
<td>gammu-smsd command line option, 5</td>
</tr>
<tr>
<td>-X, suicide=seconds</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-c, -config=file</td>
<td>gammu-smsd command line option, 5</td>
</tr>
<tr>
<td>-d, -daemon</td>
<td>gammu-smsd command line option, 5</td>
</tr>
<tr>
<td>-d, -delay=seconds</td>
<td>gammu-smsd-monitor command line option, 9</td>
</tr>
<tr>
<td>-f, -max-failures=count</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-h, -help</td>
<td>gammu-smsd command line option, 5</td>
</tr>
<tr>
<td>-i, -install-service</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-k, -stop-service</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-l, -loops=count</td>
<td>gammu-smsd-monitor command line option, 8</td>
</tr>
<tr>
<td>-n, -service-name=name</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-p, -pid=file</td>
<td>gammu-smsd command line option, 5</td>
</tr>
<tr>
<td>-s, -start-service</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-u, -uninstall-service</td>
<td>gammu-smsd command line option, 6</td>
</tr>
<tr>
<td>-v, -version</td>
<td>gammu-smsd command line option, 5</td>
</tr>
</tbody>
</table>

### C

- CheckSecurity, 2
- CommTimeout, 2, 13
- configuration option add_sent_info, 30
- BackendRetries, 15
- CheckBattery, 13
- CheckSecurity, 2, 13
- CheckSignal, 13
- CommTimeout, 2, 12, 13
- create_outbox, 30
- create_outbox_multipart, 30
- Database, 15, 26
- DBDir, 16, 27
- DebugLevel, 12
- delete_outbox, 29
- delete_outbox_multipart, 30
- delete_phone, 28
- DeliveryReport, 13
- DeliveryReportDelay, 14
- Driver, 12, 16, 26
- DriversPath, 16, 27
- ErrorSMSPath, 16
- ExcludeNumbersFile, 14, 17
- ExcludeSMSCFile, 15, 17
- find_outbox_body, 29
- find_outbox_multipart, 29
- find_outbox_sms_id, 29
- HardResetFrequency, 13
- Host, 15, 26, 46
- InboxFormat, 17, 25
- InboxPath, 16

[exclude_numbers], 17
[exclude_smsc], 17
[gammu], 7, 11, 18
[include_numbers], 17
[include_smsc], 17
[smsd], 11
[sql], 11, 27, 28
IncludeNumbersFile, 14, 17
IncludeSMSCFile, 14, 17
insert_phone, 28
LogFile, 11, 12
LogFormat, 11
LoopSleep, 2, 13
MaxRetries, 12
MultipartTimeout, 13
NetworkCode, 12
OutboxFormat, 17
OutboxPath, 16
Password, 15, 26
PC, 15
PhoneCode, 12
PhoneID, 14, 48, 50
PIN, 12
Receive, 15, 49
ReceiveFrequency, 2, 13
refresh_phone_status, 31
refresh_send_status, 29
ResetFrequency, 2, 13
RunOnFailure, 14
RunOnReceive, 14, 21–23, 46
save_inbox_sms_insert, 28
save_inbox_sms_select, 28
save_inbox_sms_update, 28
save_inbox_sms_update_delivered, 28
Send, 15, 49
SendTimeout, 12
SentSMSPath, 16, 17
Service, 11, 12
SkipSMSCNumber, 15
SQL, 16, 27, 46
StatusFrequency, 2, 13
TransmitFormat, 17
update_received, 29
update_sent, 31
User, 15, 26
configuration section
[exclude_numbers], 11, 17
[exclude_smss], 11, 17
[gammu], 7, 11, 18
[include_numbers], 11, 17
[include_smss], 11, 17
[smsd], 11
[sql], 11, 27, 28

D
Database, 26
DBDir, 27
Driver, 12, 26
DriversPath, 27

E
evironment variable
· DECODED_1_MMS_ADDRESS, 22
· DECODED_1_MMS_SENDER, 22
· DECODED_1_MMS_SIZE, 22
· DECODED_1_MMS_TITLE, 22
· DECODED_1_TEXT, 22
· DECODED_PARTS, 21
· SMS_1_CLASS, 21
· SMS_1_NUMBER, 21
· SMS_1_TEXT, 21
· SMS_MESSAGES, 21
ExcludeNumbersFile, 17
ExcludeSMSCFile, 17

gammu-smsd command line option
· -G, –group=group, 5
· -S, –run-service, 6
· -U, –user=user, 5
· -X, –suicide=seconds, 6
· -c, –config=file, 5
· -d, –daemon, 5
· -f, –max-failures=count, 6
· -h, –help, 5
· -i, –install-service, 6
· -k, –stop-service, 6
· -n, –service-name=name, 6
· -p, –pid=file, 5
· -s, –start-service, 6
· -u, –uninstall-service, 6
· -v, –version, 5
gammu-smsd-inject command line option
· -c, –config=file, 7
· -h, –help, 7
· -v, –version, 7
gammu-smsd-monitor command line option
· -C, –csv, 9
· -c, –config=file, 8
· -d, –delay=seconds, 9
· -h, –help, 8
· -l, –loops=count, 8
· -v, –version, 8

G
GSM_SMSDService::AddSentSMSInfo (C function), 54
GSM_SMSDService::CreateOutboxSMS (C function), 54
GSM_SMSDService::FindOutboxSMS (C function), 54
GSM_SMSDService::Free (C function), 53
GSM_SMSDService::Init (C function), 53
GSM_SMSDService::InitAfterConnect (C function), 53
GSM_SMSDService::MoveSMS (C function), 54
GSM_SMSDService::ReadConfiguration (C function), 55

Index
GSM_SMSDService::RefreshPhoneStatus (C function), 55
GSM_SMSDService::RefreshSendStatus (C function), 55
GSM_SMSDService::SaveInboxSMS (C function), 53

H
Host, 15, 26, 46

I
InboxFormat, 25
IncludeNumbersFile, 17
IncludeSMSCFile, 17

L
LogFile, 11
LogFormat, 11
LoopSleep, 2

O
OutboxPath, 16

P
Password, 26
PhoneID, 48, 50

R
Receive, 49
ReceiveFrequency, 2
ResetFrequency, 2, 13
RunOnReceive, 14, 21–23, 46

S
Send, 49
SentSMSPath, 17
Service, 12
SQL, 27, 46
StatusFrequency, 2

U
User, 26