

Nokia MMSC EAIF Emulator – User's Guide  
Version 1.0  
March 4, 2002

## Table of contents

<b>1. PURPOSE</b> .....	<b>4</b>
<b>2. INTRODUCTION</b> .....	<b>4</b>
<b>3. FUNCTIONALITY OF THE EAIF-EM</b> .....	<b>4</b>
<b>4. BEFORE YOU START</b> .....	<b>5</b>
<b>5. INSTALLING THE NOKIA EAIF-EM</b> .....	<b>5</b>
<b>6. USING THE NOKIA EAIF-EM</b> .....	<b>6</b>
6.1 STARTING THE EMULATOR.....	6
6.2 TESTING ORIGINATING APPLICATIONS .....	6
6.2.1 Receiving a Multimedia Message from originating application .....	7
6.2.2 Message Details .....	8
6.2.3 Message Logs.....	10
6.2.4 Delivery Reports.....	11
6.3 TESTING TERMINATING APPLICATIONS.....	12
6.3.1 Creating a Multimedia Message .....	13
6.3.2 Sending a Multimedia Message .....	15
6.3.3 Message Details .....	16
6.3.4 Message Logs.....	16
6.4 TESTING FILTERING APPLICATIONS.....	17
6.4.1 Creating a Multimedia Message .....	17
6.4.2 Sending a Multimedia Message to a filtering application .....	18
6.4.3 Message Details .....	20
6.4.4 Message Logs.....	20
6.4.5 Communicating with a Filtering Application .....	20
<b>7. CONFIGURING NOKIA EAIF-EM</b> .....	<b>22</b>
7.1 ADDING NEW TEMPLATES AND EXAMPLE MESSAGES.....	23
7.2 THE SYSTEM LOG .....	23
<b>8. USE CASE</b> .....	<b>23</b>
8.1 ONE TERMINATING EMULATOR – ONE ORIGINATING EMULATOR.....	23
<b>9. REFERENCES</b> .....	<b>23</b>

### Change history

March 4, 2002	Version 1.0	Document added into Forum Nokia
---------------	-------------	---------------------------------

# NOKIA

Nokia MMSC EAIF Emulator – User's Guide

Version 1.0

## Disclaimer:

Nokia Corporation disclaims all liability, including liability for infringement of any proprietary rights, relating to the implementation of information presented in this document. Nokia Corporation does not warrant or represent that such use will not infringe such rights.

Nokia Corporation retains the right to make changes to this specification at any time without notice.

## License:

A license is hereby granted to download and print a copy of this specification for personal use only. No other license to any other intellectual property rights is granted herein.

## 1. PURPOSE

This document describes how to use the Nokia MMSC External Application Interface Emulator (EAIF-EM). The emulator enables application developers to test the basic functionality of their applications without a live connection to the Multimedia Messaging Service Center (MMSC).

The reader of this document is expected to be familiar with the different application types, HTTP protocol and the properties of the External Application Interface (EAIF).

## 2. INTRODUCTION

The MMSC External Application Interface subsystem enables external applications to communicate with the Multimedia Messaging Service Center to send and receive Multimedia Messages. The communication between the external applications and the EAIF is carried over the HTTP 1.1 protocol with some MMS-specific extensions. See [1] to get more information about EAIF. The message format used in Multimedia Messaging Service is specified by the WAP Forum in specification WAP-209-MMSEncapsulation. See [2] to get more information about the format and structure of multimedia messages.

Nokia EAIF-EM is a tool, which enables application developers to test applications without a live connection to the MMSC. Nokia EAIF-EM provides the basic functionality of external application interface by simulating the functionality of MMSC and EAIF. The EAIF-EM also provides basic capabilities for sending/receiving MMS messages. The EAIF-EM enables application developers to verify the message format and sending/receiving capability of applications before connecting the applications to a live MMSC.

## 3. FUNCTIONALITY OF THE EAIF-EM

The Nokia EAIF-EM provides the following functionalities:

- Support for Originating Applications

The emulator is able to receive multimedia messages sent by an originating application. The emulator verifies that the message is sent according to EAIF specifications, validates the format of the received message and finally returns a response to the request.

- Support for Terminating Applications

The emulator is able to submit an MMS message to a terminating application. The emulator contains ready-made MMS messages, with different contents, which can be sent to applications according to the EAIF specification. After the message is sent to the application the emulator is able to receive and display the response the application sent.

- Support for Filtering Applications

The emulator is able to submit an MMS message to a filtering application. The same ready-made MMS messages used in the terminating application case can be submitted to a filtering application. The emulator may also send headers, without the message body, to the filtering application. After the message is processed the emulator is able to receive the response and the modified message from the filtering application.

- Delivery Reporting

The emulator allows an originating application to request a delivery report. The delivery report can be submitted via the emulator's GUI to a terminating application if the originating application requested a delivery report in the message. See [1] to get more information about delivery reports and the corresponding functionality.

- Support for Synchronous or Asynchronous Applications

The emulator is capable of receiving messages from an originating application and the responses from terminating and filtering applications synchronously. From terminating and filtering applications the emulator is also capable of receiving responses in an asynchronous manner. See [1] to get more information about synchronous and asynchronous applications.

- Data Logging / Status Reporting

The emulator keeps track of the message- and system-related events as well as error information. All the events and error information can be stored to log files to analyse the events later. The data logging / status reporting functionality allows the user to view the structure of the messages and to identify the reason for the reported errors.

- Templates for Creating Multimedia Messages

The emulator provides several ready-made templates and example messages. The example messages contain combinations of different media, such as images (jpeg or gif) and text, and they can be easily submitted to external applications.

- Addition of New Templates and Example Messages

The emulator allows users to add new templates and example messages to be used in testing. The users can add their own messages with different contents to the emulator to better meet the requirements of the tested application.

#### 4. BEFORE YOU START

Before installing the Nokia EAIF-EM, the user should have:

- A Java2 Runtime Environment (JRE) v1.3.1\_02 (or higher) installed. The JRE can be downloaded from the Sun website (<http://java.sun.com>)
- At least 5 MB of disk space, plus the disk space needed for log files

The user should also identify where the EAIF-EM will be installed. This path will be referenced as `emulatordir` throughout the remainder of this document.

#### 5. INSTALLING THE NOKIA EAIF-EM

The EAIF Emulator can be downloaded from the web pages of Forum Nokia (<http://www.forum.nokia.com>) after registering to the system and accepting the common terms.

To install the Nokia EAIF-EM, unzip the `eaifem.zip` into the directory specified by `emulatordir` using WinZip or some other uncompressing software.

## 6. USING THE NOKIA EAIF-EM

This chapter explains how the EAIF-EM can be used in testing originating and terminating applications.

### 6.1 Starting the Emulator

To start the Nokia EAIF-EM, execute the startup.bat or startup.sh, depending on your operating system, in emulatordir/bin. The following picture shows how the emulator main screen will appear.



Figure 1 The emulator main screen

If you need multiple emulators simultaneously (for example one as originating and one as terminating), you must make one emulatordir directory for each of them. The easiest way is to copy the whole directory. You may also have to modify eaifem.properties file (see 7 Configuring the Nokia EAIF-EM and 8 Use Case)

### 6.2 Testing Originating Applications

To test an external application acting as an originating application, select "Originating" from the "Application" menu. The emulator is available on the default port 8189 listening for new multimedia messages. You can change the default port by editing eaifem.properties file, if needed (See 7 Configuring the Nokia EAIF-EM). After selecting "Originating" from the application menu, the following window will appear.

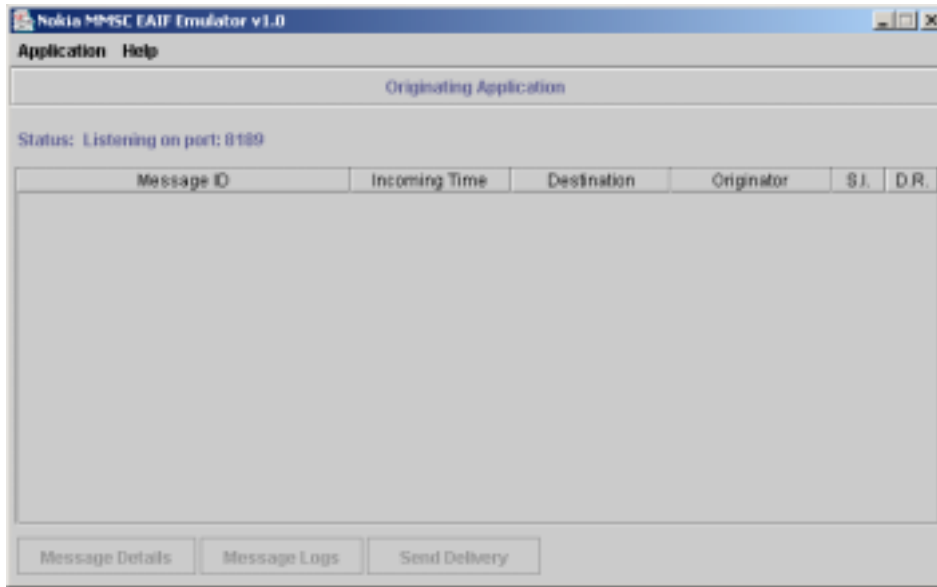


Figure 2 The message window originating application case

## 6.2.1 Receiving a Multimedia Message from originating application

Now the emulator is listening to the defined port and is ready to receive multimedia messages sent by the application (see 8 Use Cases for more details).

When a new multimedia message is received, a new row is added to the message list, showing the following message information:

- **Message ID** unique ID of the message, generated when the message is accepted in the Nokia EAIF-EM.
- **Incoming Time** time when the message arrived at the Nokia EAIF-EM.
- **Destination** address of the recipient.
- **Originator** address of the sender.
- **Success Indicator (S.I.)** indicating if any error occurred during the message validation. The green (success) or the red (error) bullet will indicate the status.
- **Delivery Requested (D.R.)** indicating whether the originator requested a delivery report or not.

The following figure illustrates the details of a received message.

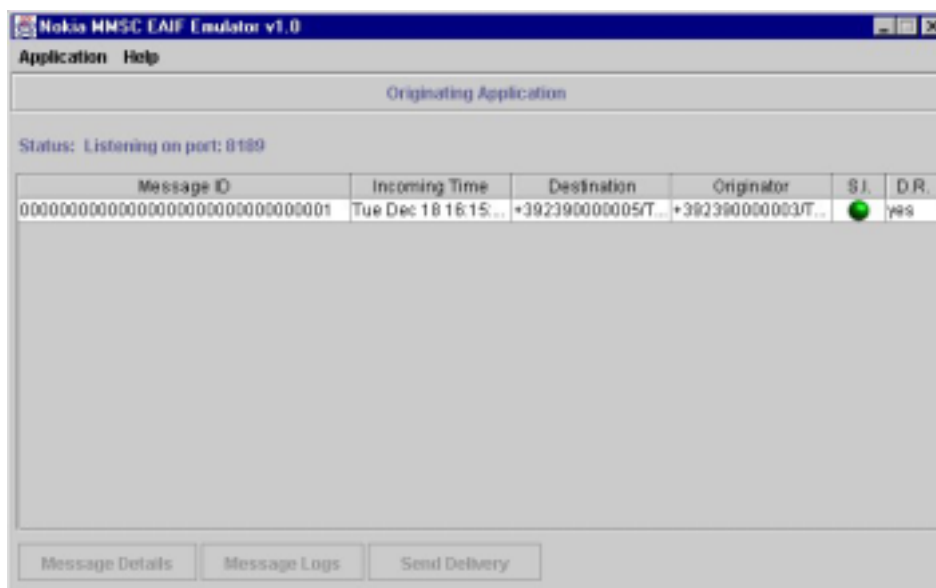


Figure 3 The message window after the EAIF emulator has received a message from an originating application

### 6.2.2 Message Details

Any other detail regarding the message can be viewed by selecting the message within the message list, and by clicking "Message Details". The following picture shows how message details will appear.



Content-Type	Application/vnd.wap.multipart.mixed if presentation part is missing  Application/vnd.wap.multipart.related if presentation part is included in the message	The content-type of the message
Date		Arrival time of the message to the EAIF emulator
Cc	Either an MSISDN number or an e-mail address	Carbon copy address of the recipient
Bcc	Either an MSISDN number or an e-mail address	Blind carbon copy address of the recipient
Subject	Any sender defined value	Subject of the message
Class	Either personal, advertisement, informational or auto	Class of the message.
Expiry*	Either absolute value or interval	Length of time the message will be stored in MMSC time to delete the message (operable only in live MMSC)
Delivery Time*	Either absolute value or interval	Time of desired delivery. Indicates the earliest possible delivery of message to the recipient (operable only in live MMSC)
Priority	Either low, normal or high	Priority of the message for the recipient.
Sender-Visibility *	Either hide or show, if present	Defines whether the address of the sender is visible for the message recipient
Delivery-Report	Either yes or no	Specifies whether the user wants a delivery report
Read-Reply*	Either yes or no	Specifies whether the user wants a read report from the message
Presentation	If present the value is yes	Specifies, whether the presentation file is included in the message or not
Number of contents	Any integer indicating the number of contents	Number of contents in the message body

NOTE: Fields marked with (\*) in the table above do not have the corresponding functionality in the EAIF-EM.

### 6.2.3 Message Logs

Message logs are generated as the Nokia EAIF-EM receives multimedia messages. Message logs contain information about the multimedia message and the response the emulator sent back.

Each log record starts with a tag describing if the generated event was an error (<E>), a warning (<W>) or any other useful information (<I>). Clicking on "Message Logs" will cause the following screen to appear.

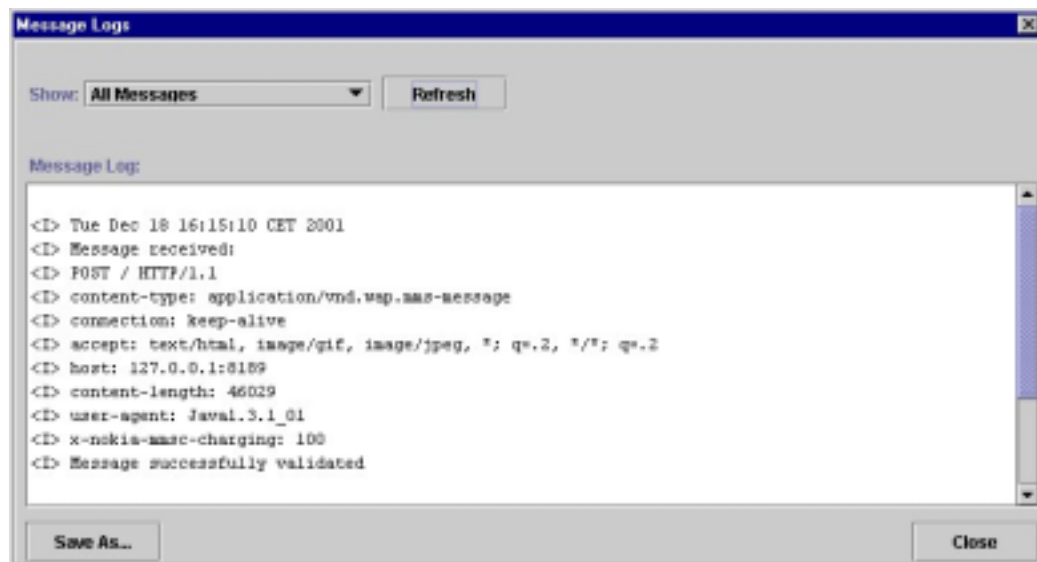


Figure 5 Message log window

To filter log records, select from the drop down list the preferred view ("All Messages", "Warnings and Errors" or "Only Errors"), and click "Refresh". Furthermore, by clicking "Save As..." it is possible to save the selected event log records to a file.

#### 6.2.4 Delivery Reports

An originating application is allowed to request a delivery report when submitting the message to the EAIF-EM. In this case the emulator is able to create and send the delivery report to a terminating application (originating applications can only send messages, the delivery reports must be sent to a terminating application). By selecting the certain message from the list of messages received from originating applications (See Figure 3) and clicking "Send Delivery" the following screen will appear.

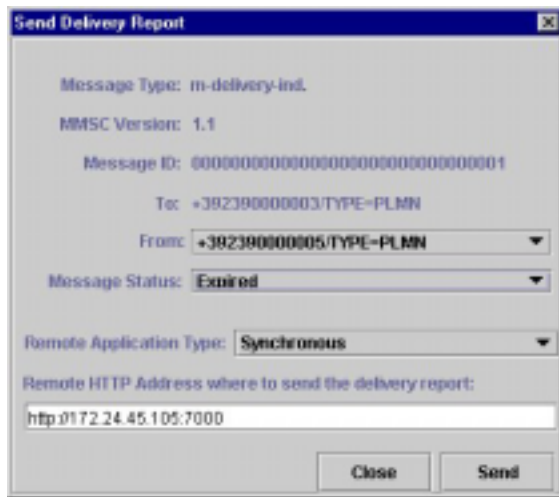


Figure 6 Delivery report window, for sending a delivery report to the application

Before sending the delivery request, fill in the following fields:

- **From** the message recipient sending the delivery report.
- **Message Status** the delivery status (Expired, Retrieved, Rejected or Deferred) to be sent.
- **Remote Application Type** specifying if the remote application will send the response synchronously or asynchronously.
- **Remote HTTP Address** the HTTP address of the terminating application where the delivery report should be sent.

### 6.3 Testing Terminating Applications

To test an external application acting as a terminating application, select "Terminating" from the "Application" menu in the main screen. After selecting "Terminating" from the application menu, the following window will appear

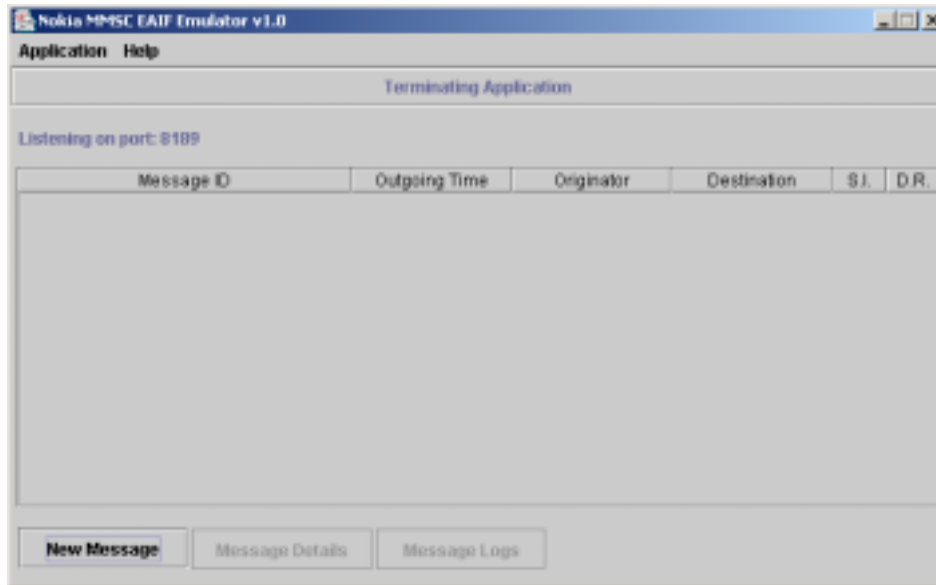


Figure 7 Message window in terminating application case before sending a message to the application.

After that the emulator is ready to send new multimedia messages to a terminating application. The default port 8189 is used for listening to the responses in the case of asynchronous terminating applications. You can change the default port by editing `eaifem.properties` file, if needed (See 7 Configuring the Nokia EAIF-EM).

### 6.3.1 Creating a Multimedia Message

By clicking "New Message", it is possible to select a multimedia message from the ready-made templates and, next, send it to a terminating application. The following screen will appear.



Figure 8 Message creation window

The Nokia EAIF-EM allows the user to create a multimedia message selecting from the list a message template. Templates are combinations of different contents (images, plain text, audio, etc) and each of them will provide several example messages, ready to be submitted to a terminating application. New templates and example messages can be added (see Adding New Templates and Example Messages).

To see a preview of the selected multimedia message click the following:

- **Image Preview** showing the image content.
- **Text Preview** showing the plain text content.
- **Details** showing message details (See Testing Originating Application - Message Details).

Click "Send" to send the message. The following figure presents an example of a picture in a message containing an image + text.



Figure 9 Message preview window

### 6.3.2 Sending a Multimedia Message

After pushing the "Send" button in the message window, the following screen will appear.

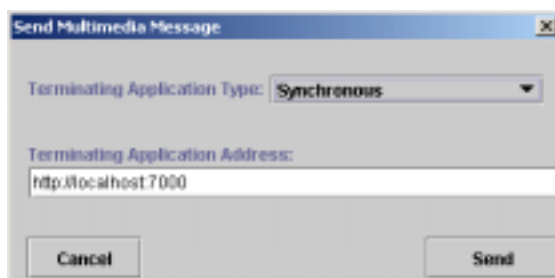


Figure 10 Message sending to a terminating application

In order to send the message to the application, the following fields should be filled:

- **Terminating Application Type** specifying if the terminating application will send the response synchronously or asynchronously.
- **Terminating Application Address** the HTTP address of the terminating application where to send the multimedia messages. The default address is read from eaifem.properties file. (See 7 Configuring the Nokia EAIF-EM for more details)

When a new multimedia message is sent, a new row is added to the message list, showing the following message information:

- **Message ID** unique ID of the message, generated when the message is created in the Nokia EAIF-EM.
- **Outgoing Time** time when the message is sent from the Nokia EAIF-EM.
- **Originator** address of the sender.
- **Destination** address of the recipient.
- **Success Indicator (S.I.)** indicating if any error occurred during the message validation. An hourglass will appear if the external application is configured to send the response asynchronously. Once the response is received, the green (success) or the red (error) bullet will indicate the status.
- **Delivery Requested (D.R.)** indicating whether the originator requested a delivery report or not.

The following figure presents the information in the message window after the message is sent to the terminating application.

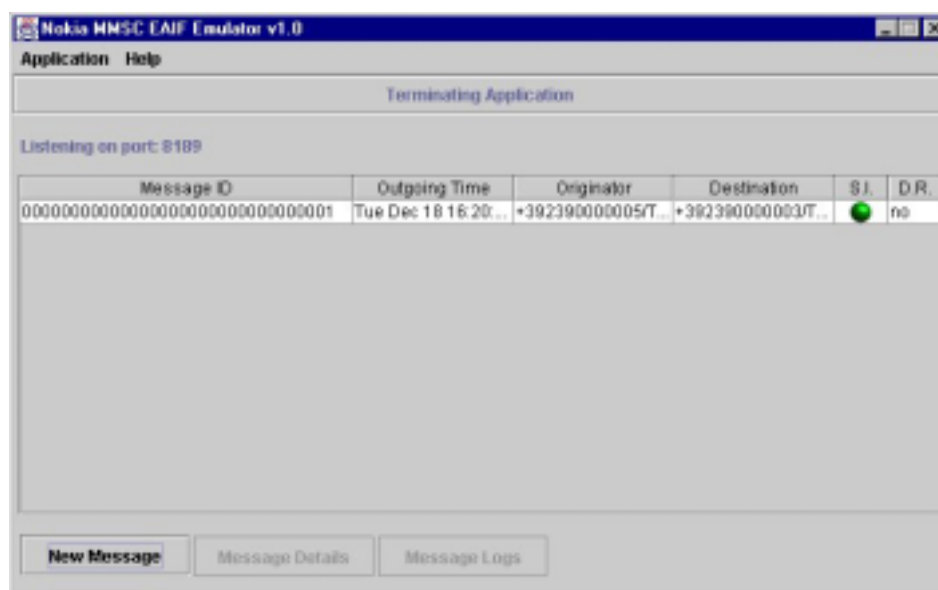


Figure 11 Message window in terminating application case after sending a message to the application

### 6.3.3 Message Details

See Testing Originating Application - Message Details.

### 6.3.4 Message Logs

See Testing Originating Application - Message Logs.

## 6.4 Testing Filtering Applications

Filtering applications receive a message from the MMS Center, process the message, and then send the message (or status) back to the MMS Center for further delivery. Filtering applications may modify the message (for example, content conversion) or process the message in some other way. Filtering applications can be either synchronous or asynchronous.

To test an external application acting as a filtering application, select "Filtering" from the "Application" menu in the main panel. After selecting "Filtering" from the application menu, the following window will appear

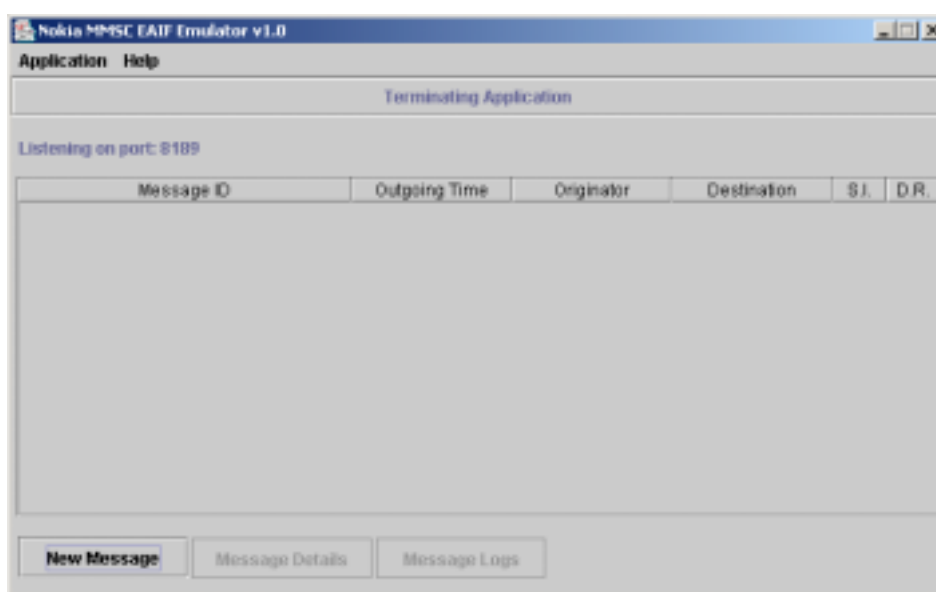


Figure 12 Message window in filtering application case before sending a message to the application

After that the emulator is ready to send new multimedia messages to a filtering application. The default port 8189 is used for listening to the responses in the case of asynchronous filtering applications.

### 6.4.1 Creating a Multimedia Message

By clicking "New Message", it is possible to select a multimedia message from the ready-made templates and, next, send it to a filtering application. The following screen will appear.

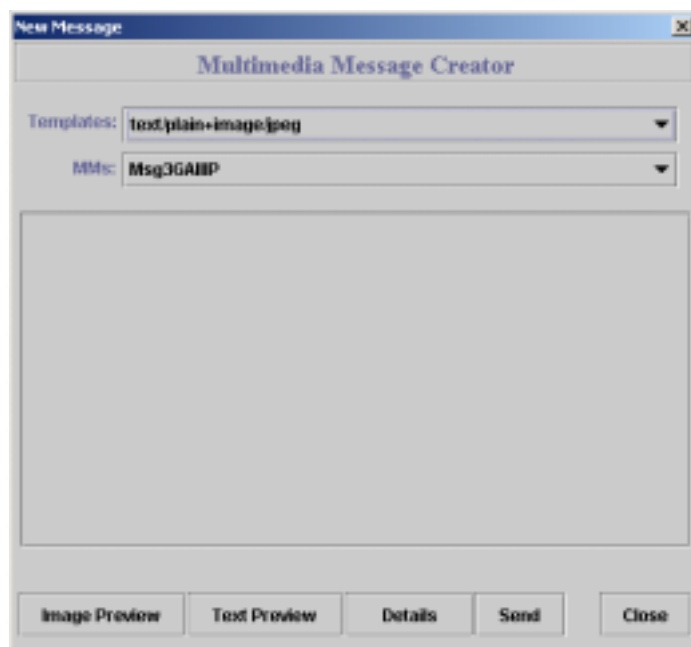


Figure 13 New message window

The Nokia EAIF-EM allows the user to create a multimedia message by selecting from the list a message template. Templates are combinations of different contents (images, plain text, audio, etc) and each of them will provide several example messages, ready to be submitted to a filtering application. New templates and example messages can be added (see Adding New Templates and Example Messages).

In order to have a preview of the selected multimedia message click the following:

- **Image Preview** showing the image content.
- **Text Preview** showing the plain text content.
- **Details** showing message details (See Testing Originating Application - Message Details).

#### 6.4.2 Sending a Multimedia Message to a filtering application

After pushing the "Send" button in the message window, the following screen will appear.

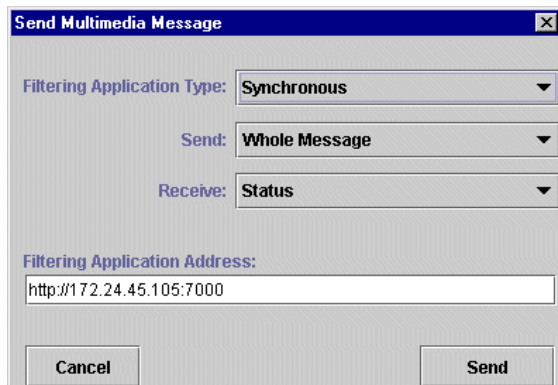


Figure 14 Message sending to a filtering application

To send the message to the application, the following fields should be filled:

- **Filtering Application Type** specifying if the filtering application will send the response synchronously or asynchronously.
- **Send** specifying if only the headers or the whole multimedia message will be sent to then filtering application.
- **Receive** specifying if only the headers, the whole multimedia or nothing except the status will be sent back by the filtering application.
- **Filtering Application Address** the HTTP address of the filtering application where to send the multimedia message.

When a new multimedia message is sent, a new row is added to the message list, showing the following message information:

- **Message ID** unique ID of the message, generated when the message is created in the Nokia EAIF-EM.
- **Outgoing Time** time when the message is sent from the Nokia EAIF-EM.
- **Originator** address of the sender.
- **Destination** address of the recipient.
- **Success Indicator (S.I.)** indicating if any error occurred during the message validation. An hourglass will appear if the external application is configured for sending the response asynchronously. Once the response is received, the green (success) or the red (error) bullet will indicate the status.
- **Delivery Requested (D.R.)** indicating if the originator requested the delivery report.

The following figure presents the information in the message window after the message is sent to the terminating application.

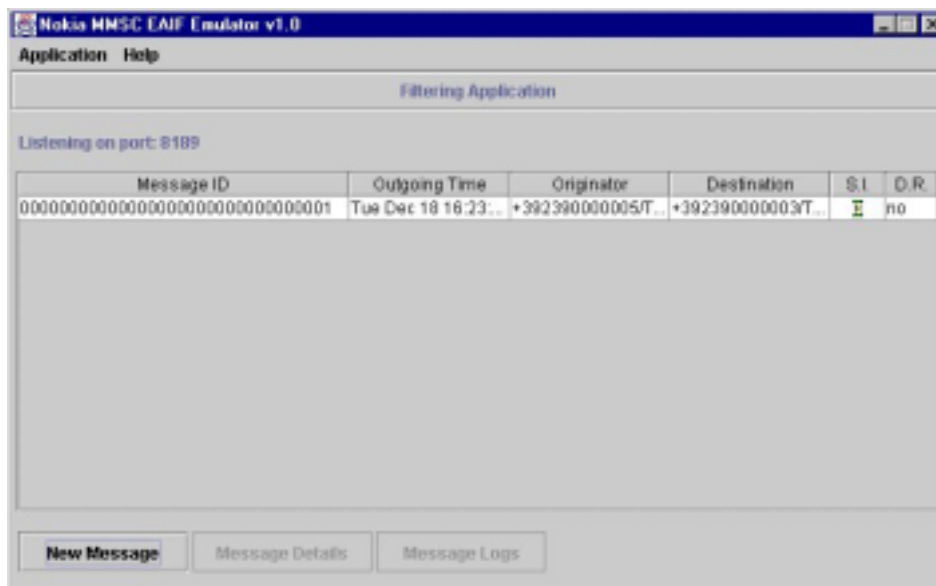


Figure 15 Message window in filtering application case after sending a message to the application

#### 6.4.3 Message Details

See Testing Originating Application - Message Details.

#### 6.4.4 Message Logs

See Testing Originating Application - Message Logs.

#### 6.4.5 Communicating with a Filtering Application

To optimize the communication between the Nokia EAIF-EM and a filtering application, the user specifies what the emulator sends to the application and what the application must send back to the emulator (See Testing Filtering Applications -Sending a Multimedia Message).

The Nokia EAIF-EM may send:

- **The whole message (m-send-req).** This is used when the filtering application needs the message content, for example in content conversion.
- **Headers only (m-send-req without the message body).** This is used when the filtering application needs information from the header fields, for example to check the address fields.

The filtering application may send back:

- **Status.** This is used when the filtering application does not modify the message.
- **Status + headers only (m-send-req without the message body).** This is used when the filtering application modifies the header fields.

- **Status + the whole message (m-send-req).** This is used when the filtering application modifies the content in the message body of the m-send-req.

To view what the filtering application has sent back, select the proper row within the message list, and click "Message Logs". Logs will include information about the response from the filtering application, even displaying if the response type was exactly as expected.

The following picture shows the logs where a filtering application has sent back an invalid response.

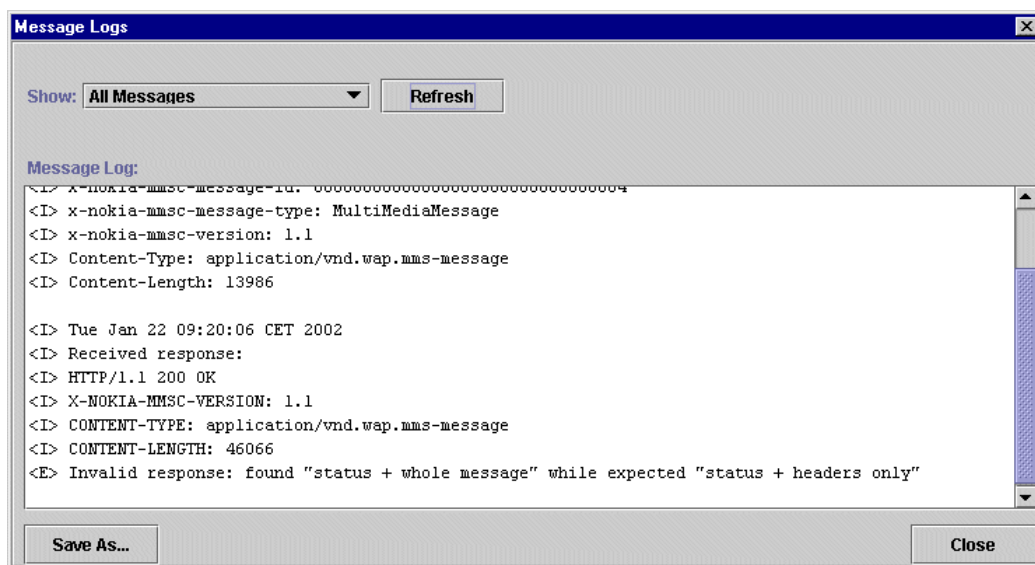


Figure 16 Invalid response from a filtering application

In the case where the filtering application is configured to send the response asynchronously, it will first send back only an interim response (signifying whether the application has approved the message for processing) containing the status. Then, if the interim status report was successful, the emulator will accept an asynchronous response from the filtering application. According to the configuration of the filtering application, the response may contain:

- Status.
- Status + headers only (m-send-req headers without the message body).
- Status + the whole message (m-send-req).

The following picture shows the logs where a filtering application has first sent back an interim response containing a successful status report, and next the asynchronous response containing status and headers only, as expected.

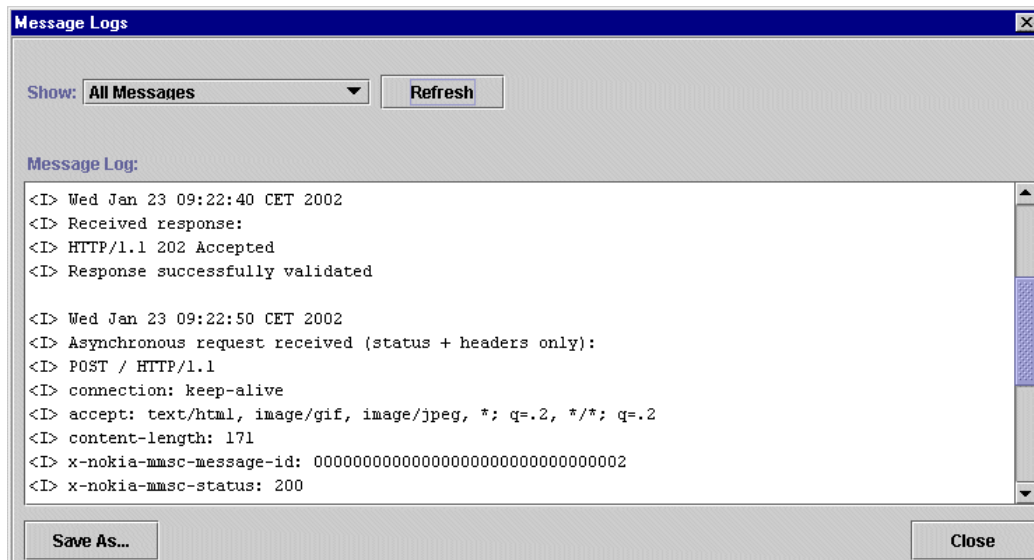


Figure 17 Message logs to a response from asynchronous filtering application

## 7. CONFIGURING NOKIA EAIF-EM

The Nokia EAIF-EM configuration can be modified by editing the properties file named `eaifem.properties` and located in `emulator\dir\com\nokia\eaifem`.

The configuration file can be used to specify the following properties:

- **Templates\_root**      the path where templates and example messages are stored.
- **Port**                    the port used to listen to the HTTP requests and responses.
- **Log\_level**                specifying the user preferred view for filtering event log records within the Message Logs screen. This should have one of the following values:
  - 0, "All Messages".
  - 1, "Warnings and Errors".
  - 2, "Only Errors".
- **TA\_addr**                 the default HTTP address of the terminating application.

Example of `eaifem.properties` file:

```

#MMSC EAIF Emulator Properties
#Tue Jan 1 00:00:00 EET 2002
templates_root=./Templates
port=8189
log_level=0
TA_ADDR=http://localhost:7000

```

## 7.1 Adding New Templates and Example Messages

You can use Nokia MMS Java Library [4] to make your own multimedia messages. To add new templates and example messages, copy the new files into the proper directory as specified by the `template_root` property within the configuration file. Example messages are divided into two distinct files having the same name but different file extensions:

- The `.txt` file describes the content of the example message. Furthermore, this is used to retrieve the template the example message belongs to.
- The `.mms` file is the encoded multimedia message.

## 7.2 The System Log

The Nokia EAIF-EM provides a system log where any event related to internal functions is stored. Each log record starts with a tag describing if the generated event was an error (<E>), a warning (<W>) or any other useful information (<I>).

The log file is named `eaifem.log` and is located in `emulator\com\nokia\eaifem`.

## 8. USE CASE

### 8.1 One Terminating Emulator – One Originating Emulator

The simplest way to learn the functionality of the emulator is use two emulators, one as originating and one as terminating. You can configure the first emulator to send a multimedia message to the other emulator. In this example the first emulator is functioning in the terminating application mode and the second in the originating application mode. Sometimes the terminology might cause some misunderstandings, but you should think that the terminology is defined from the application point-of-view, in other words based on the mode in which the application is functioning. Each Emulator needs its own Java classes and `eaifem.properties` files, so you need to copy the `emulator\dir` for each of them. You should also modify the default ports so that the originating application is listening to the port to which the terminating application is sending.

```
#Example of originating application
templates_root=./Templates
port=8000
log_level=0
TA_ADDR=http://localhost:7000
```

```
#Example of terminating application
templates_root=./Templates
port=8189
log_level=0
TA_ADDR=http://localhost:8000
```

## 9. REFERENCES

- [1] External Applications Developer's Guide, DN00148759, Nokia Oyj
- [2] WAP-209-MMSEncapsulation-20010601-a
- [3] Nokia MMS Java Library documentation

[4] Nokia MMS Java Library, downloadable from Forum Nokia web pages.

#### LIST OF TERMS AND ABBREVIATIONS

Term or abbreviation	Description
EAIF	External Application Interface subsystem of MMSC
EAIF-EM	EAIF Emulator
HTTP	Hypertext Transport Protocol
MMS	Multimedia Messaging Service
MMSC	Multimedia Messaging Service Center