IWD – Requesting NTF Services

Content

History

Version	Date	Adjustments
A	2003-00-09	First revision
B	2003-10-21	Second revision
C	2004-11-23	Added messages voicemailoff, cfuon and temporarygreetingon. Added call type (voice or video) to slamdown information messages.
D	2005-04-18	Added message mwidisabled. Changed to word document.
E	2006-04-28	Added grouped subscriber logout message
PF1	2008-02-07	Added message.delete message.
PF2	2008-03-13	Merge from CP06

1 Introduction

This document describes the interface used for requesting NTF services.

1.1 Purpose

The purpose of this protocol is to let other components request various forms of notifications.

1.2 Versions

This protocol has no formal versions. For special services the protocol is prepared for version handling, but the details are not yet defined.

1.3 Related Protocols

Since this protocol is email-based, the email protocols SMTP and IMAP are involved, and even more important are the specifications for email contents, i.e. RFC822 with updates and extensions.

The main service provided by NTF, i.e. notifying users about normal messages they have received, interprets email in accordance with [1].

2 Session

This protocol is a store-and-forward protocol so the session concept does not apply.

3   Dialogues

This protocol is a one-way protocol where a single request message, independent of other messages, is submitted to NTF without any response message, so the dialogue concept does not apply.

4   Messages

4.1   Message overview

This section describes common properties of all messages. The specific messages for NTFs different notification services are described in the following sections.

All messages in this protocol have the form of email, so communication with NTF is indirect, via an email server. Messages to NTF arrive as email to NTFs own mailboxes in the email server, and in some cases the email can also be stored in one or more subscriber mailboxes. The type of the messages and other "parameters" are defined by the headers in the email, although in some cases, headers in mime parts of the message body are used.

4.2   Addressing

Each NTF is allocated to one mail server. It handles requests concerning subscribers located on that mail server, and ignores requests concerning other subscribers. Thus, there will not be any duplicate notifications if a service request is sent as an email with multiple receivers in the "To:" header.

Each NTF has a number of general notification mailboxes, called gnotificationX_Y, where X is a number to differentiate between several NTFs connecting to the same email server, and Y is a sequential numbering of the mailboxes for a particular NTF. It is extremely unusual to have any other mailbox names than gnotification1_0, gnotification1_1 and so on in an email server. All gnotification mailboxes in an email server are equal and traffic to NTF is randomly distributed between them.

The recipients of notifications are determined from the email headers "To:" and "CC:" as follows:

1. The email store stores every incoming email in one of the notification mailboxes without regard to any address information.
2. Unless there is a "To:" header in the email containing "notification.off", the email is also stored in the "normal" user's inbox.
3. NTF does notification processing for all recipients listed in the email headers "To:" and "CC:".

This implies that:

- To generate a notification without storing anything in the users inbox, you include "notification.off" in the "To:" header of the email.
- A NTF connected to a specific MS can only handle notifications to subscribers which have the MUR attribute mailHost equal the mail host in the To headers. E.g. a new service request arrives to NTF, addressed to notification.off@< mailhost>. NTF will only process the service request for the addressed subscriber if the <mailhost> is equal to the subscribers MUR attribute mailHost.
- *Every* email that arrives to an email store is automatically stored in one of NTFs notification mailboxes.

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4.3   Notification Service Message

This is the primary message in this protocol. If a message is not a special service message or a system notification, it is interpreted as a notification service message. For notification messages NTF does normal notification processing. The content of the mail is interpreted according to [1].

4.4   Special Service Message

The following chapters describe different service requests to NTF. Every service request is a regular RFC 822 email.

4.4.1   Subscriber Logout Messages

A subscriber logout message is sent by a user interface to tell NTF that a user has logged out from MVAS. This is useful for notifications that have an on/off state, e.g. message waiting indicators, and to delete pending notifications from NTF.

NTF requires the following headers to interpret the message as a subscriber logout request. All other headers are superfluous and will not be interpreted by NTF. Optional parameters can be added in the email body.

To: notification.off@<subscribers mailhost>
Ipms-Notification-Type: mvas.subscriber.logout
Ipms-Notification-Content: <subscribers phone number>

lastinventory=<inventorytime>
new=<newcount>
retrieved=<retrievedcount>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers phone number>	Is the telephone number of the user that has logged out. This value must be equal to the subscribers user attribute telephonenumber in MUR.
<inventorytime>	The time that the last inventory was made, before the subscriber logged out. The format is the date format defined in [3], with the added restriction that year must be four digits. Two-digit years must not be used. Also, the optional seconds part must be present for this parameter.
<newcount>	The number of new messages at logout, based on the information available to the client.[1]

---

[1] This may sometimes differ from the actual number of new messages, e.g. if a message is deposited between the last inventory and logout.

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<retrievedcount> The number of new messages that were retreived during the session that has ended with logout.

The first two headers, To and Ipms-Notification-Type, distinguish this mail as a subscriber logout service request.

The last header, Ipms-Notification-Content, contains the telephone number of the subscriber that has logged out.

The three parameters in the body are all optional. Any other text found in the message body is ignored.

Example of a subscriber logout message. Bold text indicates mandatory headers.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Wed, 28 Mar 2007 15:10:10 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail7.ipms.mobeon.com
Reply-to: <>
Message-id: <0HKW0057CEUM29@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: mvas.subscriber.logout
Ipms-Notification-Content: 070223344

lastinventory= Wed, 28 Mar 2007 15:10:03 +0200
new=1
retrieved=1
```

Figure 1: Example of a subscriber logout message. Bold text indicates mandatory headers.

4.4.2   Grouped Subscriber Logout Messages

A grouped subscriber logout message is sent from a client to indicate that a group of subscribers has logged out from the system. This is the same as the regular subscriber logout message but it contains a list of numbers to reduce the number of mails sent to NTF.

NTF requires the following headers to interpret the message as a grouped subscriber logout request. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<any mailhost>
Ipms-Notification-Type: mvas.subscriber.logout
Ipms-Notification-Content: body

<subscribers phone number> <subscribers mailhost>

where

<any mailhost>	Any registered MS in the system that has a user in the list of subscribers. The mail can consist of several to-addresses for all the available <subscribers mailhosts> in the list.
<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR
<subscribers phone number>	is the telephone number of the user that has logged out. This value must be equal to the subscribers user attribute telephonenumber in MUR.

The first three headers, To, Ipms-Notification-Type and Ipms-Notification-Content, distinguish this mail as a grouped subscriber logout service request.

The body contains a list of subscriber that has been logged out.

A grouped subscriber logout service request can be sent several different MS in the system. Since the service request can contain several different <Subscribers Mail host> attribute. Hence, one service request shall be sent to each different <Subscribers Mail host> values in the service request. NTF will only process service requests to subscribers where the user attribute mailHost in MUR is equal to the <Subscribers Mail host> found in the body of the service request.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 15:59:10 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail3.ipms.mobeon.com
To: notification.off@mail5.ipms.mobeon.com
To: notification.off@mail7.ipms.mobeon.com
Reply-to: <>
Message-id: <0HKW0057CEUM29@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: mvas.subscriber.logout
Ipms-Notification-Content: body

070112455 mail5.ipms.mobeon.com
070112453 mail3.ipms.mobeon.com
070124555 mail7.ipms.mobeon.com
070924555 mail5.ipms.mobeon.com
070116555 mail7.ipms.mobeon.com
070112452 mail7.ipms.mobeon.com
```

Figure 2: Example of a grouped subscriber logout message. Bold text indicates mandatory headers.

4.4.3   MWI Disabled Messages

A mwidisabled message is sent to NTF when a user has disabled MWI notifications.

To be sure that the mwi icon is turned off for the user, NTF sends a mwioff message to the user without checking if the user has MWI disabled or not.

NTF requires the following headers to interpret the message as a mwidisabled request. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<subscribers mailhost>
Ipms-Notification-Type: mwidisabled
Ipms-Notification-Content: <subscribers phone number>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers phone number>	is the telephone number of the user that has logged out. This value must be equal to the subscribers user attribute telephonenumber in MUR.

NTF requires the headers in the following list to interpret the message as a mwi disabled service request. All other headers are superfluous and will not be interpreted by NTF.

- The first two headers, To and Ipms-Notification-Type, distinguish this mail as a mwidisabled service request.
- The last header, Ipms-Notification-Content, contains the telephone number of the subscriber that shall have notifications turned off.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 15:59:10 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail7.ipms.mobeon.com
Reply-to: <>
Message-id: <0HKW0057CEUM29@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: mwidisabled
Ipms-Notification-Content: 070223344
```

Figure 3: Example of a mwidisabled message. Bold text indicates mandatory headers.

4.4.4   Message delete message

A message delete message is sent to NTF when one or more new mails in the user's inbox has been deleted. This can be either automatically via the MS probe or by a user via MEC.

NTF requires the following headers to interpret the message as a message deleted request. All other headers are superfluous and will not be interpreted by NTF.

The first two headers, To and Ipms-Notification-Type, distinguish this mail as a message deleted service request.

To: notification.off@<subscribers mailhost>
Ipms-Notification-Type: message.delete
Ipms-Notification-Content: <subscribers phone number>

new=<new messages>

deleted=<deleted new messages>

originator=<originator>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers phone number>	is the telephone number of the user whose message has been deleted. This value must be equal to the subscriber's user attribute telephonenumber in MUR.
<new messages>	The number of new messages remaining after the delete.
<deleted new messages>	The number of new messages that has been deleted
<originator>	Specifies if the messages was deleted by the user itself or automatically by the system. The values are "user" and "system".

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 15:59:10 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail7.ipms.mobeon.com
Reply-to: <>
Message-id: <0HKW0057CEUM29@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=ms1.ipms.mobeon.com
Ipms-Notification-Type: message.delete
Ipms-Notification-Content: 070223344

new=0
deleted=1
originator=system
```

4.4.5   IVR To SMS Information Message

An "IVR To SMS" notification message is sent to NTF when a non subscriber receives a notification about a missed call. This notification message is also sent when a person calls the "IVR To SMS" number directly and wants to send an SMS to a person.

A single "IVR To SMS" service request may contain information about many "IVR To SMS" events for different persons. For each row in the body a SMS will be sent to the SMS-C. Each row is separated with a new line.

Note: An IVR To SMS service request must only be sent to one and only one MS in the system, since non-subscribers can not be assigned to a particular MS.

NTF requires the following headers and body content to interpret the message as an "IVR To SMS" service request. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<any mailhost>
Ipms-Notification-Type: ivrtosms
Ipms-Notification-Content: body

<calling number> <language> <destination number>

where

<any mailhost>	Any registered MS in the system
<calling number>	This value is used to identify the caller in the SMS.
<language>	Specifies the language used in the SMS.
<destination number>	Receiver of the SMS.

The first two headers, To and Ipms-Notification-Type, identify the message as a "IVR To SMS" information message.

The header Ipms-Notification-Content indicates that actual IVR To SMS information is found in the body of the message. The body contains one or more lines, where each line contains the callers telephone number, the language that should be used when composing the "IVR To SMS" SMS, and the receivers telephone number separated by one space character.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail7.ipms.mobeon.com
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: ivrtosms
Ipms-Notification-Content: body

070987654321 en 070112233
070987654322 sv 070112234
070987654323 ru 070112235
.
.
.
```

Figure 5: Example of an IVR To SMS message. Bold text indicates mandatory headers.

4.4.6   Slamdown Information Messages

A slamdown information message is a message to NTF with information about calls that arrived to a subscriber's mailbox, but where the caller hung up without leaving a message.

A single slamdown information message may contain information about many slamdown events to different subscribers. The slamdown information service requires the following contents from the general case:

To: notification.off@<subscribers mailhost>
Ipms-Notification-Type: mvas.subscriber.slamdown
Ipms-Notification-Content: body

[<call type>] <calling number> <mail host> <email address>

where

<call type>	This field is optional and defaults to *voice*. If present, the value can be *voice* or *video* to indicate the type of call.
<subscriber mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR. The mail can consist of several to-addresses for all the available < mail hosts> in the list.
<calling number>	This value is used to identify the caller in the SMS.
<mail host>	The full name of the mail host where the users mailbox resides.
<email address>	The receivers email address2.

The first two headers, To and Ipms-Notification-Type, identify the message as a slamdown information message.

The header Ipms-Notification-Content indicates that actual slamdown information is found in the body of the message. The body contains one or more lines, where each line contains the callers telephone number, the full name of the mail host where the users mailbox resides and the receivers email address separated by one space character.

A slamdown service request can be sent several different MS in the system. Since the service request can contain several different <Mail host> attribute. Hence, one service request shall be sent to each different <Mail host> values in the service request. NTF will only process service requests to subscribers where the user attribute mailHost in MUR is equal to the <Mail host> found in the body of the service request.

---

2   This "email address" must be exactly the email address stored in the user registry, not a general email address as described in RFC 822.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail3.ipms.mobeon.com
To: notification.off@mail5.ipms.mobeon.com
To: notification.off@mail7.ipms.mobeon.com
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: mvas.subscriber.slamdown
Ipms-Notification-Content: body

070112455 mail5.ipms.mobeon.com jdg@ipms.mobeon.com
070112453 mail5.ipms.mobeon.com llp@ipms.mobeon.com
video 070124555 mail7.ipms.mobeon.com ndr@ipms.mobeon.com
070924555 mail5.ipms.mobeon.com ssv@ipms.mobeon.com
070116555 mail7.ipms.mobeon.com peg@ipms.mobeon.com
070112452 mail7.ipms.mobeon.com pdf@ipms.mobeon.com
voice 070112415 mail3.ipms.mobeon.com aad@ipms.mobeon.com
```

Figure 6: Example of a slamdown information message. Bold text indicates mandatory headers.

4.4.7   Voice Mail Off Messages

This message tells NTF that a subscriber has turned off voice mail. NTFs reminder function can at a later time either turn voice mail back on, or remind the subscriber to do it.

NTF requires the following mail content to interpret the message as a voice mail off message. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<subscribers mailhost>
To: <subscribers email address>
X-Ipms-Deferred-Delivery: <date>
Ipms-Notification-Type: voicemailoff
Ipms-Notification-Content: body

action=<requested action>
forwardingnumber=<forwarding number>
unsetforwards=<forwards>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers email address>	Subscribers email address. This value must be equal to the subscriber's user attribute mail in MUR. NTF uses this value to identify the subscriber in MUR
<date>	Indicates the time when voice mail should be turned on or a reminder sent. The format is the date format defined in [3], with the added restriction that year must be four digits. Two-digit years must not be used.
<requested action>	Indicates the action to do when the time arrives. It has one of the values none, autoon or reminder. The value none can be used to cancel an earlier autoon or reminder request.
<forwarding number>	is the number that should be used to forward calls for this subscriber to the voice mail system.
<forwards>	Tells NTF which forwards that were turned off, so that NTF later only restores those forwards. The value is a comma separated list of *cf-unconditional*, *cf-busy*, *cf-no-reply* and *cf-not-reachable*.

The lines in the body can be in any order, and the lines forwardingnumber and unsetforwards can be omitted when the action is not autoon.

The header X-Ipms-Deferred-Delivery can be omitted when the action is none.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Wed, 08 Sep 2004 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
To: notification.off@mail7.ipms.mobeon.com
To: kalle.anka@ankeborg.kvack
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.ipms.mobeon.com>
Subject: ipms/message
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: voicemailoff
Ipms-Notification-Content: body
X-Ipms-Deferred-Delivery: Wed, 15 Sep 2004 15:10 +0100

action=autoon
forwardingnumber=31123456789
unsetforwards=cf-busy,cf-no-reply,cf-not-reachable
```

Figure 7: Example of a voice mail off message. Bold text indicates mandatory headers.

4.4.8   CFU On Messages

This message tells NTF that the subscriber has turned on CFU (call forwarding unconditional), i.e. call forwarding for all calls. NTFs reminder function can at a later time either turn the call forwarding off, or remind the subscriber to do it.

NTF requires the following mail content to interpret the message as a CFU on message. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<subscribers mailhost>
To: <subscribers email address>
X-Ipms-Deferred-Delivery: <date>
Ipms-Notification-Type: cfuon
Ipms-Notification-Content: body

action=<requested action>
forwardingnumber=<forwarding number>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers email address>	Subscribers email address. This value must be equal to the subscriber's user attribute mail in MUR. NTF uses this value to identify the subscriber in MUR
<date>	Indicates the time when unconditional call forwarding should be turned on or a reminder sent. The format is the date format defined in [3], with the added restriction that year must be four digits. Two-digit years must not be used.
<requested action>	Indicates the action to do when the time arrives. It has one of the values none, autooff or reminder. The value none can be used to cancel an earlier autooff or reminder request.
<forwarding number>	is the number that calls have been forwarded to. NTF needs this number to check that the subscriber has not later unconditionally forwarded calls somewhere else outside the system.

The header X-Ipms-Deferred-Delivery can be omitted when the action is none.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Wed, 08 Sep 2004 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
To: notification.off@mail7.ipms.mobeon.com
To: kalle.anka@ankeborg.kvack
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.ipms.mobeon.com>
Subject: ipms/message
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: cfuon
Ipms-Notification-Content: body
X-Ipms-Deferred-Delivery: Wed, 15 Sep 2004 15:10 +0100

action=autooff
forwardingnumber=31123456789
```

Figure 8: Example of a CFU on message. Bold text indicates mandatory headers.

4.4.9   Temporary Greeting Reminder Messages

This message tells NTF that the subscriber has activated a temporary greeting. NTFs reminder function can remind the subscriber to turn the temporary greeting off at a later time.

NTF requires the following mail content to interpret the message as a temporary greeting on message. All other headers are superfluous and will not interpreted by NTF.

To: notification.off@<subscribers mailhost>
To: <subscribers email address>
X-Ipms-Deferred-Delivery: <date>
Ipms-Notification-Type: temporarygreetingon
Ipms-Notification-Content: body

action=<requested action>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers email address>	Subscribers email address. This value must be equal to the subscribers user attribute mail in MUR. NTF uses this value to identify the subscriber in MUR
<date>	Indicates the time when a reminder shall be sent. The format is the date format defined in [3], with the added restriction that year must be four digits. Two-digit years must not be used.
<requested action>	Indicates the action to do when the time arrives. It has the value *none* or *reminder*. The value none can be used to cancel an earlier request.

The header X-Ipms-Deferred-Delivery can be omitted when the action is none.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Wed, 08 Sep 2004 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
To: notification.off@mail7.ipms.mobeon.com
To: kalle.anka@ankeborg.kvack
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.ipms.mobeon.com>
Subject: ipms/message
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: temporarygreetingon
Ipms-Notification-Content: body
X-Ipms-Deferred-Delivery: Wed, 15 Sep 2004 15:10 +0100

action=reminder
```

Figure 9: Example of a temporary greeting on message. Bold text indicates mandatory headers.

4.4.10 Phone State Changed Message

The "Phone State Changed" message is used to inform NTF of a change in the state of the phone associated with a number. The term phone refers to an abstract entity that has the number, and not the physical device.

The message is currently used to indicate that the "phone" has moved to another physical device, terminal, which may have different capabilities than the previous terminal, but could in the future be used to carry such meanings as "switched off" or "switched on".

A single "Phone State Changed" service request may contain information about state changes for many telephone numbers. In each row in the body, one state change is reported. Each row is separated with a new line.

NTF requires the following headers and body content to interpret the message as an "Phone State Changed" service request. All other headers are superfluous and will not be interpreted by NTF.

> **To**: notification.off@<subscribers mailhost>
> **Ipms-Notification-Type**: phone.state.changed
> **Ipms-Notification-Content**: body
>
> **<phone number> <mail host> <state> <par1>…<parN>**

where

<subscribers mailhost>	The attribute mailHost in MUR for some of the subscribers listed in the email body. There must be one To-header for each unique mail host in the body.

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<phone number>   The number of the phone that has changed state.

<mail host>   The full name of the mail host where the users mailbox resides.

<state>   The state that has changed. The allowed values are:

                        terminal The phone has moved to another terminal.

                        Lines with other values for state, will be ignored.

<par1>, <parN>   Optional state-dependent parameters, specified in section 4.4.10.1.

The first two headers, To and Ipms-Notification-Type, identify the message as a "Phone state changed" message.

The header Ipms-Notification-Content indicates that actual change information is found in the body of the message. The body contains one or more lines, where each line contains the telephone number, the full name of the mail host where the users mailbox resides, an identification of the state that has changed and optional state-dependent parameters, separated by one space.

A phone state changed message is typically sent to several mail hosts in the system. Each mail host that has a subscriber in the body list receives a copy. Each NTF will only process service requests to subscribers where the <mail host> is the one serviced by that NTF, to avoid that several NTFs handle the same notification.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by mail7.mobeon.com
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail7.mobeon.com
To: notification.off@mail5.mobeon.com
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.mobeon.com
Ipms-Notification-Type: phone.state.changed
Ipms-Notification-Content: body

070987654321 mail7.mobeon.com terminal nomwi noflash noreplace
070987654322 mail5.mobeon.com terminal mwi noflash replace
070987654323 mail7.mobeon.com terminal mwi flash replace
 .
 .
 .
```

Figure 10: Example of a Phone State Changed message. Bold text indicates mandatory headers.

4.4.10.1 Parameters for Phone State "Terminal"

The following parameters are available when the changed state is "terminal":

mwi	The terminal supports MWI notification.
nomwi	The terminal does not support MWI notification.
flash	The terminal supports Flash SMS.
noflash	The terminal does not support Flash SMS.
replace	The terminal supports replace of SMS.
noreplace	The terminal does not support replace of SMS.

All other values are ignored.

If a terminal capability is missing, it is assumed that it is unknown by the client and shall be determined by the server.

4.5 System Notification Messages

The system notification service lets clients request NTF to send a notification message to one or more subscribers. Both the request message (i.e. the headers of the email requesting the service) and the content of the notification message is configurable. Thus this document can not describe the format of system notification messages. It is recommended that the headers described in special service messages in chapter 4.4 are used if possible. The only requirement for a system notification is that the "To:" header must contain the email address of the subscribers that shall receive the notification.

One example of a system notification is that the email server can send a system notification to the user when his mailbox is full. This document only covers the protocol aspects of the feature, details can be found in [2].

For each system notification there is a rule with a number of requirements for email header values. To be a system notification message, an email must fulfil the rule for one of the system notifications. Which rule it matches defines which system notification it is. Note that NTF has no real understanding of the system notifications, it just does "if the email matches these headers, I shall send this notification message but if the email matches those headers I shall send that notification message...".

4.5.1 Quota Warning Messages

An email which is a quota warning message has the following headers:

```
From: Mail_Administrator
Subject: WARNING: Quota exceeded
Received:([x.x.x.x]) by
To: <user mail address>, notification.off@<mailhost>
```

where

<user mail address>	is the mail address of the user whose mailbox is full.
<mailhost>	is the users mail host.
x.x.x.x	is the IP address of the mail server.

The first two headers are required to distinguish the email as a quota warning message. The "Received" header is there to prevent abuse of the quota warning function by parties outside the system. The "To" header contains the email address of the user that shall receive the quota warning.

4.5.2 CLI Information Messages

When retrieving a voice message, using MVAS TUI, the user shall be able to press a DTMF key in Get message menu, and thereby receive an SMS with the CLI from the person that deposit the message. NTF receives the CLI service request and send a SMS to the subscriber containing the depositors CLI number.

NTF requires the following headers to interpret the message as a CLI service request. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<subscribers mailhost>
To: <subscriber email address>
Subject: <calling number>
Ipms-Notification-Type: mvas.subscriber.caller_cli
Ipms-Notification-Content: <caller telephone number>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers email address>	Subscribers email address. This value must be equal to the subscriber's user attribute mail in MUR. NTF uses this value to identify the subscriber in MUR
<calling number>	This value is used to identify the caller in the SMS.

The two headers, To (To: notification.off@<subscribers mailhost>) and Ipms-Notification-Type, identify the message as a CLI service request.

The To header <subscribers email address> defines the receiver of the SMS.

The subject and the Ipms-Notification-Content header contain the calling number, and specifies the from field in the SMS.

```
Return-path: <Sink@>
Received: --- deleted ---
Date: Mon, 08 Sep 2003 16:12:49 +0200 (MEST)
Date-warning: Date header was inserted by
mail7.ipms.mobeon.com
From: Sink@ipms.mobeon.com
Subject: 0046701122334455
To: notification.off@mail7.ipms.mobeon.com
To: kalle.anka@ankeborg.kvack
Reply-to: <>
Message-id: <0HKW00404FHDDT@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: mvas.subscriber.caller_cli
Ipms-Notification-Content: 0046701122334455
```

Figure 11: Example of a CLI information message. Bold text indicates mandatory headers.

4.5.3   Cut through Paging Information Message

A cut through paging notification message is sent to NTF when a caller calls a subscriber and chooses to send an SMS notification instead of leaving a voice message.

NTF requires the following headers and body content to interpret the message as a Cut Through Paging service request. All other headers are superfluous and will not be interpreted by NTF.

To: notification.off@<subscribers mailhost>
To: <subscribers email address>
Ipms-Notification-Type: sendshortmessage
Ipms-Notification-Content: body

<calling number>

where

<subscribers mailhost>	This value must be equal to the subscribers user attribute mailHost in MUR.
<subscribers email address>	Subscribers email address. This value must be equal to the subscribers user attribute mail in MUR. NTF uses this value to identify the subscriber in MUR.
<calling number>	This value is used to identify the caller in the SMS.

The two headers, To (To: notification.off@<subscribers mailhost>) and Ipms-Notification-Type, identify the message as a Cut Through Paging service request.

The To header <subscribers email address> defines the receiver of the SMS.

The header Ipms-Notification-Content indicates that the actual Cut Through Paging information is found in the body of the message. The body contains one line, this line contains the callers telephone number.

Note. When requesting a Cut Through Paging service request from NTF two To headers must be present. The reason for that is that NTF handles a Cut Through Paging service request as a System Notification. See [2] for more information regarding System Notifications.

```
Return-path: <Sink@>
Date: Mon, 08 Sep 2003 15:59:10 +0200 (MEST)
From: Sink@ipms.mobeon.com
Subject: ipms/message
To: notification.off@mail7.ipms.mobeon.com
To: kalle.anka@ankeborg.kvack
Reply-to: <>
Message-id: <0HKW0057CEUM29@mail7.ipms.mobeon.com>
Ipms-Message-Type: notification
Ipms-Notification-Version: 1.0
Ipms-Component-From: emComponent=mvas11.ipms.mobeon.com
Ipms-Notification-Type: sendshortmessage
Ipms-Notification-Content: body

00467011223344
```

Figure 12: Example of a Cut Through Paging message. Bold text indicates mandatory headers.

5 Properties

5.1 Error handling

Erroneous messages are discarded with a log message.

5.2 Timing Properties

This section is intentionally left blank.

6 References

[1] IWD – End User Message Format

3/155 19-1/HDB 101 02

[2] Operation and Maintenance NTF
1/1543-CRH 109 127

[3] Standard for the Format of ARPA Internet Text Messages
RFC #822

7 Terminology

Term   Explanation