TECHNICAL SPECIFICATION

MC Connect HTTP

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Basic information

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Purpose of this document

This document covers complete specification of bi-directional proprietary HTTP-based protocol for transport of short messages (SMS) and delivery reports.

Features – content

1. Mobile originated message: T-Mobile to Client (MO-AT) push
2. Application originated message: Client to T-Mobile (AO-MT)
3. Delivery reports

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History of changes

1. Mobile originated message: T-Mobile to Client (MO-AT)

For each one MO-AT message, MMR creates a HTTPS GET request (insecure HTTP is not supported). Short message is being „encoded“ into URI string. The request is being „sent“ to client's application with login and password via HTTP basic authentication.

Parameters description:

Parameter	Description	Example
MO_MessageID	Unique message ID assigned by MMR. You have to check for duplicates!	EurotelCZ.M2MPSMS_0001a365
MO_Source	**Source number** (MSISDN) of the message.	+420602123456
MO_Destination	**Destination number** (shortcode) of the message.	9003030
MO_Timestamp	Message timestamp (SCTS). 14-digit format (YYYYMMDDhhmmss).	20120229235012
MO_Data	Type=SMS, SubType=Text **Message text**, UTF8 string, URL-encoded Type=SMS, SubType=Binary **Data payload**, hexdump Type=MMS *Not defined*	UTF8 string „Příliš%20žluťoučký%20kůň“ Hexdump: “00fc01AA” represents 4 octets 0x00, 0xfc, 0x01 and 0xaa
MO_Type	**Type of the message** SMS – text message MMS – multimedia message	SMS
MO_SubType	Format of MO_Data - 'Text' or 'Binary'	Text
MO_UDH	**User Data Header**, hexdump Contains binary sequence as hexdump.	The string „050003010201“ indicates 6 octets of UDH (0x05 0x00 0x03 0x01 0x02 0x01).
MO_PID	**Protocol ID** (integer, 0 … 255) Protocol identification according to GSM 03.40.	215

Example

```
https://content-provider.eu/sms/receiver?MO_MessageID=EurotelCZ.M2MPSMS_0001a365&MO_Source=%2B420602123456&MO_Destination=9003030&MO_Timestamp=20120229235012&MO_Type=SMS&MO_SubType=Text&MO_Data=This+is+a+test+message
```

Client application responds with HTTP code "200", Content-Type: text/plain" and body in form:

- **`OK`** *client confirms receiving of the message*

or

- **`OK;warning - duplicate`** *client confirms with warning from duplicity check*

or

- **`OK;<parameters>`** *client confirms & sends a reply message directly*[1]

When the body text begins with "OK", message is considered as accepted, otherwise will be re-sent in a short interval (seconds).

When the body text begins with "OK;<parameters>", and at least MT_Data element is present, message is considered as accepted and direct reply (MT message) is sent. See „Direct Replies“ below.

Duplicity check – please read this paragraph carefully

The possibility of duplicate delivery of a message is natural phenomenon of HTTP-based message transport[2]*. The only way to cope with this problem is application logic. Please consider having such a piece of logic in your SMS transport implementation. Thank you.*

There is unique identification of each message you receive: MO_MessageID. It's assigned by MMR (length 8 to 60 characters, character set [A-Za-z0-9_:]. Client must store MessageID of each received message/report in some storage (say received_id_list) for future duplicity checks. When receiving messages, before pushing them to permanent storage or processing them, its MessageID must be checked against received_id_list.

If MessageID of received message **is found** in received_id_list, it's duplicate. Client application must

1. ignore the message (don't store to storage, don't push it to processing), but
2. send positive acknowledge (OK[3]), as when message is accepted,
3. send the same direct-reply as before (when using direct replies).

If MessageID of received message **is not found** in received_id_list, there is no problem. Client application must

1. push message to its permanent storage and/or processing code,
2. send positive/negative acknowledge (OK or Error) – depending of result of storage/processing.

Link supervision – connection testing

This (push) interface is regularly tested from T-Mobile side. In case there is no MO traffic for at least 30 minutes, T-Mobile may send the „enquire_link“ request to check whether the client's HTTP server is up. The http request contains one parameter:

Parameter	Description	Example
enquire_link	regular connection testing	*no value*

and no SMS-releated parameters (MO_*).
The application is required to send at least 200 OK (on http level). Content (response) may contain anything, or nothing. After client's HTTP server sends HTTP 200 OK, the link is considered up.

Example

```
https://content-provider.eu/sms/receiver?enquire_link
```

1 there is a possibility to reply offline, see further

2 Why? Imagine this: Client sends message to server, server receives it, sends positive response, but the response is lost. Server has the message received successfully. Client sees no reponse – times out. Client considers that message delivery failed and re-send the same message. Server receives the same message again.

3 with „warning – duplicate“ information

Response:

```
HTTP/1.1 200 OK
```

Direct Replies

*Warning: Direct reply **may not** be used for statefull applications. The HTTP Response, as a bearer of reply message, doesn't guarantee successfull delivery[4]. Use with caution! T-Mobile support if you are not sure. Use indirect replies (see „application originated message“ below) if you are still not sure.*

Parameters are in form of http GET request. The Direct Reply may contain following parameters:

Parameter	M/O	Description	Example
MT_Data	M	message text/data	Hello%20world.
MT_Type	O	type, 'SMS' (default) or 'MMS'	SMS
MT_SubType	O	subtype, 'Text' (default) or 'Binary'	Text
MT_DCS	O	data coding scheme[5]	245
MT_ReportRequest	O	0 … delivery report not requested (default) 1 … delivery report requested	0
MT_UDH	O	User data header	0605040B8423F0

(M)andatory, (O)ptional

Example: (`MT_Type=SMS&MT_SubType=Text&MT_Data=This+is+a+reply+message`)

See „Application originated message“ for details.

4 The retry-on-timeout mechanism on MMR side may trigger duplicate messages when http response is lost

5 MT_DCS - if you use characters from ASCII (GSM7), don't use this parameter in AO message

Client-side implementation example

The sample PHP script (receiver.php) for receiving MO messages looks like:

```
<?php
    /*
     * © T-Mobile Czech Republic a.s. 2005-2010
     * Sample PHP script for receiving MO-AT SMS for "SMS connect" service (with no direct reply)
     *
     * -- NOT FOR PRODUCTION USE -- This is an example
     */

    header('Content-type: text/plain');

    /* (1) Client must check for repeated message - duplicity check */
    if ( "$_REQUEST[MO_MessageID] found in my_received_id_list, 30 days back" )
    {
        echo "OK;warning - duplicate\n";     /* confirm but don't process the message */
    }
    else
    {
        /* (2) Client should store the message into a file, database or other permanent storage */
        if ( "message stored successfully" )
        {
            echo "OK\n";                     /* confirmation to MMR */
        }
        else
        {
            echo "Error - <some error description or whatever>\n";
                                             /* MMR will re-send the same message */
        }
    }
?>

== Received message ==
Identification: [<?= $_REQUEST[MO_MessageID] ?>]
Sender: [<?= $_REQUEST[MO_Source] ?>]
Receiver: [<?= $ REQUEST[MO Destination] ?>]
Message body: [<?= $_REQUEST[MO_Data] ?>]

== SMS dump ==
<?php var_export( $_REQUEST ) ?>
```

Connection parameters (bi-directional push interface)

The per-client, per-service connection parameters:

Item	Example value	Assigned by
MO-AT		
URL (MMR side)	https://content-provider.eu/sms/receive/	Client
http-basic username	T-Mobile	Client
http-basic password	Kxxyt53jSDr.44	Client
AO-MT		
URL (MMR side)	https://connect.sms.t-mobile.cz/mmr/send	T-Mobile
http-basic username	ServiceXyz90030	T-Mobile
http-basic password	jeCsf29976	T-Mobile

MMR crocks: mt routing: type=**http2**; FCGI: **send**

2. Application originated message: Client to T-Mobile (AO-MT)

Sending bulk SMS/Replying to Premium SMS

Client application sends messages via http request GET, authenticating itself with login and password via HTTP basic authentication.

For each one Application Originated message, client application creates a HTTP(S) GET request. Short message is being „encoded“ into URI string. The request is being „sent“ to MMR with login and password via HTTP basic authentication.

HTTP request elements

Parameter	M/O	Description	Example
MT_Source	O	**Source number** (shortcode) of the message.	9003030
MT_Destination	M	**Destination number** (MSISDN) of the message. See also: „OP:<OpID>“ in response-line.	+420602123456
MT_Data	M	Type=SMS, SubType=Text **Message text**, UTF8 string, URL-encoded Type=SMS, SubType=Binary **Data payload**, hexdump Type=MMS *Not defined*	UTF8 string „Příliš%20žluťoučký%20kůň“ Hexdump: “00fc01AA” represents 4 octets 0x00, 0xfc, 0x01 and 0xaa
MT_Type	O	**Type of the message** SMS – text message (default) MMS – multimedia message	SMS
MT_SubType	O	Format of MT_Data - 'Text' (default) or 'Binary'	Text
MT_RefID	O	MO_MessageID value of related MO message (required for MT billing services)	EurotelCZ.M2MPSMS_0001a365
MT_DCS	O	data coding scheme[6]	245
MT_ReportRequest	O	0 … delivery report not requested (default) 1 … delivery report requested	0
MT_UDH	O	**User Data Header**, hexdump Contains binary sequence as hexdump. Useful for concatenated messages.	0605040B8423F0
MT_ValidityPeriod	O	The *MT_ValidityPeriod* indicates the **expiration time**, after which the SMSC **stops delivery attempts** on message. Such a message will be discarded, when not (yet) delivered at VP time. The corresponding (EXPIRED) delivery report is returned back. The *MT_ValidityPeriod* is specified as absolute 14-digit timestamp (YYYYMMDDhhmmss),	20150228090807

6 MT_DCS - if you use characters from ASCII (GSM7), don't use this parameter in AO message

Parameter	M/O	Description	Example
		local time. There are limitations: • minimum: VP must be at least 15 minutes in future. If not, MMR will adjust the VP to now+15min and the warning is returned. • maximum: VP must not exceed 7 days in future. If the specified VP exceeds now+7d, it's adjusted by MMR and the warning is returned.	
MT_Priority	O	Relative priority of the message. Allowed values: • low • normal (default) • high	high

(M)andatory, (O)ptional

HTTP response format

MC system responds with HTTP code "200", Content-Type: text/plain" and body. The very first line of response body is defined; any additional line(s) should be ignored.

In the response-line, one of 3 replies may occur:

- **OK;<MC_MessageID>;<RecD>[;OP:<OpID>][;optional human-readable text]**
  - OK … fixed value (indicates success).
  - MC_MessageID … unique message identifier assigned by MMR (length 8 to 60 characters, character set [A-Za-z0-9_:].
  - RecD … recommended minimum delay before submitting next message (miliseconds); by obeying this recommended delay, you won't reach the 'THROTTLING-ACTIVE' (see below).
  - OpID … numeric identification of destination operator (1-65535) as determined from MT_Destination by MMR's routing table and NP database; presence of this element is configurable per client; the value is country- and installation-specific.
- **REJECT;<reason of rejection>**
  - Message rejected permanently by MMR (protocol error/malformed message); do not try to re-send such a message. See <reason of rejection> for details.
- **ERROR;<error description>**
  - MMR would like to accept such a message. Unfortunately, there was a temporary indisposed conditions causing the message was not stored. Please re-send the same message again. Please wait at least 30 seconds before.
- **THROTTLING-ACTIVE;<RecD>[;optinal human-readable text]**
  - Message not accepted – maximum throughput exceeded. Please re-send the same message again. You should wait spacified amount of miliseconds (see RecD) before re-sending, otherwise the message will be rejected again.
  - RecD … recommended minimum delay before re-submitting the same message (miliseconds).

Example – simple MT message

https://connect.sms.t-mobile.cz/mmr/send?MT_Source=9003030&MT_Destination=%2B420602123456&MT_Type=SMS&MT_SubType=Text&MT_Data=This+is+a+test+message:%C5%BDlu%C5%A5ou%C4%8Dk%C3%BD%20k%C5%AF%C5%88%20ti%C5%A1e%20%C5%99eht%C3%A1%20@.-,

Explanation: this http request represents text message „This is a test message:Žluťoučký kůň tiše řehtá @.-," from shortcode 9003030 to MSISDN +420602123456.

Example – response

OK;HbxPSMS_00000a84;470ms;OP:208

Explanation: this response confirms that the above message was accepted with identification HbxPSMS_00000a84 and recommended minimum delay before submitting next message is 470 miliseconds. The message's destination number (+420602123456) is national operator number 208.

Connection parameters (bi-directional push interface)

The per-client, per-service connection parameters:

Item	Example value	Assigned by
MO-AT		
URL (MMR side)	https://content-provider.eu/sms/receive/	Client
http-basic username	**Chyba! Neznámý název vlastnosti dokumentu.**	Client
http-basic password	Kxxyt53jSDr.44	Client
AO-MT		
URL (MMR side)	https://connect.sms.t-mobile.cz/mmr/send	T-Mobile
http-basic username	ServiceXyz90030	T-Mobile
http-basic password	jeCsf29976	T-Mobile

MT_UDH

- MT_UDH must contain binary-as-hexdump. The string „050003010201" indicates 6 octets of UDH (0x05 0x00 0x03 0x01 0x02 0x01).

Concatenated messages

To send concatenated (long) SMS messages you can use parameter MT_UDH:
MT_UDH must be in this format: 050003DDXXYY, where:

- 050003 is fixed part
- DD: 01-FF, CSMS reference number, must be same for all the SMS parts in the CSMS
- XX: 01-FF, total number of parts concatenated message.
- YY: 01-FF, this part's number in the sequence

For sending long (concatenated) messages, you can set parameter MT_UDH and split long message by 153 characters. Example: message with 200 characters will be splitted to the two parts, one with 153 characters, second with 47 characters.

Example – concatenated (long) MT message

Part 1 of 2

Request (client → T-MOBILE)

https://connect.sms.t-mobile.cz/mmr/send?MT_Source=%2B420234567890&MT_Destination=%2B494617123456&MT_Type=SMS&MT_SubType=Text&MT_UDH=050003010201&MT_Data=This+is+a+test+message+first+part+with+153+characters.....

Response (T-MOBILE → client)
MC system responds with HTTP code "200", Content-Type: text/plain" and body in form:
`OK;ExampleService90030xx_00de5012;4978ms`

Part 2 of 2

Request (client → T-MOBILE)

https://connect.sms.t-mobile.cz/mmr/send?MT_Source=%2B420234567890&MT_Destination=%2B494617123456&MT_Type=SMS&MT_SubType=Text&MT_UDH=050003010202&MT_Data=This+is+a+test+message+second+part

Response (T-MOBILE → client)
MC system responds with HTTP code "200", Content-Type: text/plain" and body in form:
`OK;ExampleService90030xx_00de5013;9971ms`

- MC_MessageID for both messages will be different
- Each part of concatenated message will be billed as single message

3. Delivery reports

Sending delivery reports from T-MOBILE message router to the client's application

The delivery reports are releated to AO-MT messages. Delivery report informs asynchronously whether (when) MT message was (was not) delivered to the mobile station. Please check with your T-Mobile contact person whether you have delivery reports active on your connection.

One MT message may trigger several delivery reports. There may be some intermadiate reports; there is exactly one final report.

Note: Client's application should request the delivery report with MT_ReportRequest=1 parameter while sending AO-MT message.

MC system creates a HTTP GET request to client application, authenticating itself with login and password via HTTP basic authentication.

Parameters description:

Parameter	Presence	Description
DN_MessageID	M	identification of AO message releated to this delivery report

Parameter	Presence	Description
DN_Source	O	source number, ie. '+420602123456' (copy of MT_Destination from AO message)
DN_Destination	O	destination number, ie. '9003030' (copy of MT_Source from AO message)
DN_StatusCode	M	Result of delivery
DN_StatusText	O	Human-readable description of message status
DN_Timestamp	M	Timestamp of message status

presence: (M)andatory, (O)ptional

Result of delivery (DN_StatusCode) - overview

DN_StatusCode	Description
-128 … -1	intermediate status (additional delivery report will follow)
0	final status; message was delivered at *DN_Timestamp*
1 … 9	final status; message was not delivered
10...127	final status; delivery status is not known

Result of delivery (DN_StatusCode) - details

DN_StatusCode	Final	Description (message was ...)
-3	n	accepted by PLMN operator (used for MT-billing)
-2	n	accepted by PLMN operator's subsystem on transport-level
-1	n	*reserved for internal use*
0	y	delivered to mobile station
1	y	not delivered
2	y	rejected by PLMN operator (used for MT-billing)
3	y	expired on SMSC
4	y	rejected by MMR/MTBA (used for MT-billing)
10	y	accepted by PLMN operator on transport-level (not real relivery report)
11	y	expired – no report from PLMN operator within three[7] days

7 The timeout (3 days) may vary per installation, per service

Examples – successfull deliveries

```
DN_StatusCode           0
DN_StatusText           Message delivered
DN_Timestamp            20090730140447
DN_MessageID            ClientACCF_001a9377
DN_Source               +420736302320
DN_Destination          +420737000111
```

Message from 736302320 (virtualSC number) to (+420)737000111 has been delivered at 14:04:47.

```
DN_StatusCode           0
DN_StatusText           Zprava byla dorucena - ISUC_005 - Message delivered
DN_Timestamp            20090730140346
DN_MessageID            ClientXPPS_001a9372
```

Message ClientXPPS_001a9372 has been delivered at 14:03:46 [8].

```
DN_StatusCode           0
DN_StatusText           SUCCESSFUL_DELIVERY
DN_Timestamp            20091005120225
DN_MessageID            XdcSubscription90030CZK30_000169ba
DN_Source               90030030
DN_Destination          +420775773773
```

Message from 90030030 to (+420)775773773 has been delivered at 12:02:25.

Examples – failed deliveries

```
DN_StatusCode           1
DN_StatusText           Message delivery failed with error code 000
DN_Timestamp            20090730130003
DN_MessageID            ClientXPPS_001a8f28
DN_Source               +420736302320
DN_Destination          +420732000000
```

Message id ClientXPPS_0a18f28 has not been delivered; see DN_StatusText for operator-specific cause.

```
DN_StatusCode           1
DN_StatusText           Zprava nebyla dorucena  - ISUC_006 - Message delivery failed
DN_Timestamp            20090730125101
DN_MessageID            ClientXPPS_001a92f0
DN_Source               1991023
```

Message id ClientXPPS_0a18f28 has not been delivered; see DN_StatusText for operator-specific cause.

```
DN_StatusCode           1
DN_StatusText           No Connector found for Source [] and Destination
[+42076583700]
DN_Timestamp            20090730124939
DN_MessageID            ClientXPPS_001a92a0
DN_Source
DN_Destination          +42072583700
```

Message id ClientXPPS_0a18f28 has not been delivered; dropped by MMR because of missing A-number (empty DN_Source).

---

8 the source and destination number elements are optional

```
DN_StatusCode           2
DN_StatusText           rejected on transport-level (Connector.SMPP rejected): (Code
                        64) MSISDN has not enough credit.
DN_Timestamp            20091001112233
DN_MessageID            AqSubscription90030CZK30_0001696d
```

Message id AqSubscription90030CZK30_0001696d (MT billing) has not been delivered; rejected by operator – pre-paid subscriber has not enough credit.